# SAF-RC-051 100 & 300 Area Component of the **RCBRA** - Incremental Soil Sampling FINAL DATA PACKAGE

#### COMPLETE COPY OF DATA PACKAGE TO:

Jill Thomson

H0-23

**EDMC** 

Jackie Queen

H0-23

KW 7/31/06 INITIAL/DATE

Jeanette Duncan

H9-02

KW 7/31/06 INITIAL/DATE

#### **COMMENTS:**

SDG E2953 SAF-RC-051

Rad only X Chem only

Rad & Chem

X Complete

Partial

**Corrected Bluegrass Report for Soil Plant Toxicity for** Sample J10DT9

**Waste Site:** 

Riparian Reference – Site #13

Vernita Bridge



PROJECT MANAGEMENT, ENGINEERING, & TECHNICAL SERVICES

July 20, 2006

Ms. Joan Kessner Subcontract Technical Representative Washington Closure Hanford LLC 3070 George Washington Way Richland, WA 99354



Dear Ms. Kessner:

ACUTE SCREENING BIOASSAYS – AMENDED BLUEGRASS REPORTS CONTRACT NUMBER 0000X-SC-G0553

Enclosed are amended Bluegrass reports for the following Sample Delivery Groups:

- BG1542-01 thru 09 Report amended July 18, 2006
  - BG1542-01A, -02A, -03A and -08A and BG1566-01 thru 05 -Report amended July 19, 2006
  - BG1575-01 thru 11 Report amended July 19, 2006
  - BG1589-01 thru 09 Report amended July 19, 2006

An electronic copy of this information is provided for your convenience.

Should you have any questions, please feel free to call me at (509) 531-8774.

Sincerely yours,

Emmett L. Richards

President

**Enclosures** 

#### Table 2: Bluegrass Chronic Test Results for Washington Closure Hanford

E, statistically significant difference from lab control by use of Equal Variance t Two-Sample Test

ns indicates a non statistically significant result; 8, indicates statistically significant at alpha (p) = 0.05; --, indicates no statistical test performed.

Leb ID:	Sample Number:	Bluegrass 14 day Germination Endpoint (%)	Significantly different compared to Lab Control?	Bluegrass Average Stem Height (mm)	Significantly different compared to Lab Control?	Bluegræss Average Root Length (mm)	Significantly different compared to Lab Control?	Average Above Ground Shoot Mass (Wet) (mg)	Significantly different compared to Lab Control?	Average Above Ground Shoot Mass (Dry) (mg)	Significantly different compared to Lab Control?	Average Roo Mass (Wet) (mg)	Significantly t different compared to Lab Control?	Average Root Mass (Dry) (mg)	Significantly different compared to Lab Control?	Average Total Mass (Shoots + Roots) (Wet) (mg)	Significantly different compared to Lab Control?	Average Total Mass (Shoots + Roots) (Dry) (mg)	Significantly different compared to Lab Control?
Tests initiated on Ja																			
Laboratory (	Control	88	-	45.7	-	125		63.9	-	12.4		113	-	7.87	-	177		20.2	-
BG1542-01	J10DW4	60	E 5	41.4	ns		-	40.5	E 5	7.30	E 5	72.4	ns	3.27	E 5	113	E 5	10.6	E 5
BG1542-02	J10DV4	64	ns	55.3	ns	-		76.2	ns	14.9	ns	123	ns	6.98	ns	199	ns	21.8	ns
BG1542-03	J10DT8	84	ns		-			90.9	ns	16.7	ns	172	ns	10.0	ns	263	ns	26.7	ns
BG1542-04	J10DV2	72	ns	48.6	ns	122	ns	58.5	ns	10.7	ns	101	ns	6.59	ns	160	ns	17.3	ns
BG1542-05	J10DV1	36	E <sup>5</sup>	41.8	ns	91.3	E 5	30.8	E 5	6.70	E 5	41.0	E 5	3.33	E <sup>5</sup>	71.8	E 5	10.0	E 5
BG1542-06	J10DV3	64	ns	47.4	ns	108	ns	60.4	ns	8.92	ns	84.5	ns	5.13	ns	145	ns	14.0	ns
BG1542-07	J10DV0	76	ns	41.5	ns	80.9	E 5	76.9	ns	14.7	ns	124	ns	9.10	ns	201	ns	23.8	ns
BG1542-08	J10LJ5	92	ns	-		***	-	78.3	ns	11.0	ns	127	ns	5.37	ns	206	ns	16.3	ns
BG1542-09	J10DT9	48	E <sup>5</sup>	37.9	ns	85.2	E 5	51.0	ns	8.66	ns	90.7	ns	5.06	ns	142	ns	13.7	ns

### BIOASSAY REPORT CHRONIC SCREENING BIOASSAYS Conducted January 25 through March 3, 2006

Report Amended July 18, 2006

Prepared for

ELR CONSULTING, INC. WASHINGTON CLOSURE HANFORD

Prepared by

CH2M HILL 2300 NW Walnut Boulevard Corvallis, Oregon 97330

July 19, 2006 Lab I.D. Nos. B1542-01 thru 09 SDG Number BG1542

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#### INTRODUCTION

CH2M HILL conducted chronic screening bioassay tests using the Sandberg bluegrass (*Poa sandbergii*) on soil samples provided by the ELR Consulting for Washington Closure Hanford, Richland, Washington. The tests were conducted from January 25 through March 3, 2006.

The statistical analysis presented in the original report (March 28, 2006) were recalculated for shoot height and root length. This document serves as an amended to the original report.

#### METHODS AND MATERIALS

#### TEST METHODS

The chronic test methods were performed according to: Standard Guide for Conducting Terrestrial Plant Toxicity Tests, ASTM E 1963-02 (2002).

#### **TEST ORGANISMS**

The seeds used were obtained from Native Grass Seeds, Cornville, Arizona. All test conditions were maintained during planting, germination, and growth phases of the test as prescribed by the ASTM protocol.

#### **CONTROL SOIL**

The control soil used in the tests was artificial soil comprised of 70 grade silica sand (70 percent by weight), kaolin clay (20 percent), and peat moss (10 percent). Calcium carbonate (0.4 percent of total weight) was added to adjust soil pH to  $7.0 \pm 0.5$ .

#### HYDRATION WATER

The water used to initially hydrate the control and test soils was Milli-Q equivalent deionized water. After initial hydration, all test chambers were watered with half strength Hoagland's solution on an every other day basis. All hydration was accomplished via sub irrigation.

#### TEST CONCENTRATIONS

The concentration tested in the bluegrass tests was 100 percent test soil with control soil alone for the lab control. For the bluegrass tests, 50 seeds per concentration were used with five replicate test chambers per concentration and 10 seeds planted per chamber. Following germination, test chambers were thinned to a maximum five seedlings per replicate.

#### SAMPLE COLLECTION

Individual soil samples used during the testing were collected between October 31, 2005, and December 6, 2005. The samples were stored in the dark at 4°C until the initiation of the initiation of the tests. Chain of Custody for sample collection is provided in Appendix C.

#### SAMPLE CROSS-REFERENCE TABLE

Table 1 provides a cross-reference of the Client ID numbers, sampling dates, sampling locations, Bluegrass test sample identification (SDG) numbers, and Analytical Lab SDG numbers.

		Table 1 Sample Cross-Reference		
Client ID	Sample Date	Sample Location	Bluegrass test SDG	Analytical Lab SDG
J10DW4	10/31/2005	600-131	BG1542-01	E2748
J10DV4	11/08/2005	PIT 23	BG1542-02	E2801
J10DT8	11/14/2005	Upland Backfill Elevated-100-F-2	BG1542-03	E2831
J10DV2	11/15/2005	Upland Native Reference-Central Plateau	BG1542-04	E2846
J10DV1	11/15/2005	Upland Backfill Low-116-DR-1&2	BG1542-05	E2847
J10DV3	11/16/2005	Upland Native Elevated-JA Jones	BG1542-06	E2857
J10DV0	11/21/2005	Riparian Elevated-Site #3 Upriver 100-D	BG1542-07	E2877
J10LJ5	11/28/2005	Riparin Low-Site #10 Downriver 100-D	BG1542-08	E2897
J10DT9	12/06/2005	Riparian Reference-Site #13 Vernita Bridge	BG1542-09	E2953

#### SAMPLE PREPARATION

Test soils and control soil were dried and homogenized prior to use. For each replicate, 90 grams dry weight of soil was added to each test chamber. The soils were initially hydrated with Milli-Q equivalent de-ionized water via sub irrigation. In addition, a sub sample of the soil was added to a surrogate chamber and hydrated for pH measurements.

#### TEST INITIATION

Tests were initiated by planting 10 seeds in each test chamber. Seeds were planted at a depth of 1 ½ times the seeds diameter (approximately 2 millimeters) and covered gently with soil. A small amount of hydration water (10 ml) was sprayed onto the soil surface to ensure seeds received moisture.

#### TEST MONITORING

According to information provided by Native Grass Seed (seed supplier), germination should take place between 14 and 28 days. The number of seeds in each test chamber that had germinated was recorded on days 12, 14, 16, 21, and 23. Germination was determined to have occurred on day 23.

Observations of the shoot appearance were recorded 7 days after germination (30 days after planting). The number of germinated seeds in each test chamber was also recorded. Chambers that had more than five germinated seeds had shoots removed to prevent overcrowding. These test chambers were thinned to five seedlings each.

Soil pH was taken at test initiation and termination by placing a subsample of soil into a specimen cup, adding hydration water, and mixing prior to the pH measurement.

#### TEST TERMINATION

Tests were terminated 14 days post germination. The number of seedlings, shoot appearance and height (tallest shoot of each plant), and root appearance and length (longest recovered root of each plant) was recorded.

For each test chamber, all of the above ground biomass (i.e. shoots) from all germinated plants were combined and placed into tarred aluminum tins. The shoots were weighed to determine the wet weight immediately following removal from the test chamber. The shoots were then dried in an oven at 60 °C for a minimum of 24 hours. The shoots were then placed into a desiccator for a minimum of 2 hours and weighed to determine dry weight.

The wet and dry weight for the roots were obtained following the same procedure as described above.

#### DATA ANALYSIS

For each test chamber, the following endpoints were calculated:

- 14 Day Post-Germination Survival (%)
  - (Calculated as the number of seedlings alive at 14 day post germination divided by 5)
- Average Above Ground Shoot Mass (Wet)
  - (Calculated as the total wet weight of the shoots divided by the number of seedlings harvested)
- Average Above Ground Shoot Mass (Dry)
  - (Calculated as the total dry weight of the shoots divided by the number of seedlings harvested)
- Average Root Mass (Wet)
  - (Calculated as the total wet weight of the roots divided by the number of seedlings harvested)
- Average Root Mass (Dry)
  - (Calculated as the total dry weight of the roots divided by the number of seedlings harvested)
- Average Total Mass (Wet)
  - (Calculated as the total combined wet weights of the shoots and roots divided by the number of seedlings harvested)
- Average Total Mass (Dry)
  - (Calculated as the total combined dry weights of the shoots and roots divided by the number of seedlings harvested)
- Average Shoot Height
  - (Calculated as the total combined height of the tallest shoot of each seedling divided by the number of seedlings harvested)
- Average Root Length
  - (Calculated as the total combined length of the longest root of each seedling divided by the number of seedlings harvested)

Note: Due to a laboratory error; the Shoot Height for samples J10DT8 and J10LJ5, was measured only for the single tallest shoot in each replicate. Similarly, the Root Length for samples J10DW4, J10DV4, J10DT8, and J10LJ5, was measured only for the single longest root from each replicate. As a result, statistical analysis for these endpoints on these samples was not performed.

Statistical analysis for each endpoint listed comprised of entering the data obtained from each replicate chamber of a test soil and comparing the results to the data from the replicate chambers of the laboratory control. Comparisons were made as a single tailed t-test, evaluating for statistically significant reductions from the control value, using CETIS version 1.1.2. The Equal Variance t Two-Sample test was used. When the assumptions of equality of variance or normality necessary for Equal Variance t Two-Sample test was not met, the Unequal Variance t Two-Sample test or Wilcoxon Rank Sum Two Sample test was used.

The endpoint data and the results statistical analysis are summarized in Table 2 below. The data represents the average value of the replicate chambers used in each test concentration.

#### RESULTS AND DISCUSSION

Table 2 summarizes the results of the bluegrass tests.

The results for sample J10DW4 indicated a statistically significant reduction in germination, average above ground shoot mass (wet), average above ground shoot mass (dry), average root mass (dry), average total mass (shoots + roots wet), and average total mass (shoots + roots dry) when compared to the laboratory control.

The results for sample J10DV1 indicated a statistically significant reduction in germination, average root length, average above ground shoot mass (wet), average above ground shoot mass (dry), average root mass (wet), average root mass (dry), average total mass (shoots + roots wet), and average total mass (shoots + roots dry) when compared to the laboratory control.

The results for sample J10DV0 indicated a statistically significant reduction in average root length when compared to the laboratory control.

The results for sample J10DT9 indicated a statistically significant reduction in germination and average root length when compared to the laboratory control.

#### Table 2: Bluegrass Chronic Test Results for Washington Closure Hanford

E, statistically significant difference from leb control by use of Equal Variance 1 Ywo-Sample Test

ns indicates a non statistically significant result; \*, indicates statistically significant at slobs (b) = 0.05; --, indicates no statistical test performed.

Lab ID:	Sumple Number;	Bivegrass 14 day Germination Endpoint (%)	Significantly different compared to Leb Control?	Bluegrass Average Stem Height (mm)	Significantly different compared to Lab Control?	(Buegrans Average Root Length (mm)	Significantly different compared to Leb Control?	Average Above Ground Shool Mass (Wel) (mg)	Significantly different compared to Lab Control?	Average Above Oround Shoot Mase (Ony) (mg)	Significantly different compared to Lab Control?	Average Root Mass (Wel) (mg)	Significantly different compared to Lab Control?		Significantly different compared to Lab Control?	Average Total Mass (Shoots + Reots) (Wel) (mg)	Significantly different compared to Lab Control?	Average Total Mass (Shoots + Roots) (Dry) (mg)	Significantly different compared to Lab Control?
Yesia initiated on Ja	n 25, 2006																		
Laboratory C	Control	88		45.7	-	125	-	63.9	-	12.4	-	113		7.87	-	177	-	20.2	
BG1542-01	J10DW4	60	E 5	41.4	ns	-	-	40.5	E <sup>5</sup>	7.30	E 5	72.4	ns	3.27	E &	113	E <sup>5</sup>	10.6	E <sup>5</sup>
BG1542-02	J10DV4	64	ns	55.3	ns	-	-	76.2	ns	14.9	ns	123	ns	6.98	ns	199	ns	21.8	ns
BG1542-03	J10DT8	84	ns	-	-			90.9	ns	16.7	ns	172	ns	10.0	ns	263	ns	26.7	ns
BG1542-04	J10DV2	72	ns	48.6	กร	122	ns	58.5	ns	10.7	ns	101	ns	6.59	ns	160	ns	17.3	ns
BG1542-05	J10DV1	36	E5	41.8	ns	91.3	E <sup>5</sup>	30.8	E <sup>5</sup>	6.70	E <sup>5</sup>	41.0	E <sup>5</sup>	3.33	E 5	71.8	E 5	10.0	E <sup>5</sup>
BG1542-06	J10DV3	64	ns	47.4	ns	108	ns	60.4	ns	8.92	ns	84.5	ns	5.13	ns	145	ns	14.0	ns
BG1542-07	J10DV0	76	ns	41.5	ns	80.9	E 5	76.9	ns	14.7	ns	124	ns	9.10	ns	201	ns	23.8	ris
BG1542-08	J10LJ5	92	ns	-	-		-	78.3	ns	11.0	ns	127	ns	5.37	ns	206	ns	16.3	ns
BG1542-09	J10DT9	48	E <sup>5</sup>	37.9	ns	85.2	E 5	51.0	ns	8.66	ns	90.7	ns	5.06	ns	142	ns	13.7	ns

#### CERTIFICATION STATEMENT

I certify that this data package is in compliance with the Statement of Work, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature:

# APPENDIX A RAW DATA SHEETS

#### BILLEGRASS GROWTH TEST

at 33.06 Test Start Date: 01/25/2006 Client: Hanford Project Day 26 3 DM 37 8m Day 0 B Day 12 NT Day 14 3 Day 16 8 Day 21 00 Sample ID: Lab Control (70% 70 grade silica sand, 20% clay, 10% peat) # seeds germinated #4/20 pH POST-EMERGENCE (16 days after planting) 2 | 7-DAYS POST-SMERGENCE (27 days after 23 planting) 30 14-DAYS POST-RE-EMERGENCE @ EMERGENCE FINAL INITIAL (26 days after planting) REPLICATE CONC (12 days after planting) (14 days after planting) (36 days after 35 planting) ( planling) 35 5 5 A 3 7 7 7-25 5 0 Control 8 6.7 5 77 6:4 C 44 0 2 D 3 331 U 2 F Bm 2. 3 large plants u/ garle rolor of multiple steens, 2 smaller Replicate A mittale stullis - much down to 5 (remail rulest) 7 metrin plants Replicate B -Psud color -2 deed of dried (I median has I bown stalk) Renlicate C 2 smill (I w/ I brown stalk) + 1 small deed medium Replicate D 3 metrum all, sous condition Replicate E 14-Days Post-Emergence: Describe shoot appearance: cose culor - no book 3 mg + 2 sm-5 med. good woor - no brown 1 19 + 4 metecust - I met u/ 1 boun show Raplicate C 1 med +2 sm -Replicate D good u/ 1 medum 3 recorn +1 small -2 hown having shouts Replicate E # short / States 11. 13,4,15,4 9,13,9,11,7 3rd Seedling 1st Seedling 2nd Seedling 4th Seedling 5th Seedling 43 mm 43 mm 56 mm 65 Replicate A (above ground) 42 mm 43 mm 44 39 mm 41 mm Replicate B mm 13, 12,12,11,10 43 mm 87 mm 54 45 mm 45 Replicate C 13,5,3 32 mm 50 23 Replicate D mm 12,15,11,2 49 mm 16 mm 45 mm 64 Replicate E Tin Tare WI. (mg) Wet Wt (mg) Dry Wt. (mg) Measure Shoot Weight: 993.05 1329.5 1068,91 (above ground) Replicate A 981.31 1393.0 10460.21 Replicate B 1077 .69 Replicate C 1031.01 1004.53 1224.Z Replicate D 977.10 1143.0 Replicate E Describe root appearence: Replicate A Replicate B Replicate C Redicate D Measure Root Length: 1st Seedling 3rd Seedling 4th Seedling 143 139 74 118 mm 215 mm mm Replicate A (Innoest root) 143 (35 mm 150 133 144 mm Replicate B 150 135 153 156 Replicate C mm TENTO mm 70 157 71 mn Replicate D RET 158 m 47 mm 76 mm 78 Replicate E Tin Tare Wt. (mg) Wet Wt (mg) 987.99 1704.8 Dry WL (mg) Measure Root Weight: 1031.77 Replicate A (longest root) G1391 88.17P 1019.85 Replicate B 993.58 1786.2 1084.12 Replicate C 981.03 1197.1 992.37 976.75 1123.3 993.93 Replicate E 60g dy. A. / 100

-11-

-12-

		Day 12 NJ	Same	de ID: E2	74801	SO12		B 1542-	01	
				seeds ge			26.00	13 13 12		oH.
CONC.	REPLICATE	PRE-EMERGENCE (12 days after planting)	@ EMERGENCE (14 days after planting)	POST EMERGE (16 days	r-	7-DA EME	YS POST- ERGENCE days after lenting) 30	14-DAYS POST- EMERGENCE (28 days after plenting)	INITIAL (Qenilesiq (Q))	FINAL (28 days after planting)
	Α	0	3	3	3	3	3	3		
100%	В	1	2	3	3	4	2.	2	10	. 0
	С	. 0	1	1	3	3	2	2	6.9	6.8
	D	1	2	3	4	4	4.	4		
	E	0	2	H	4	4	4	4		
Davs Post-Emer	pence: Selectively	thin down to 5 Seeds	ings (leave the 5 talk	est seedling	s). De	cribe s	hoot appeara	nca:		
Replicate A	~~	boum olut	w/ mult		reen		uts.			
Replicate B	1 medin	me in word	shype + [	metin		-	men :	1 hours sho	t, +2 sn	all deed o
Replicate C	2 med		d shoe		sme	. >	,	ale short		,
Replicate D	2 meto	um n gard	Slugge + i	= med		w/	brani	- 1	1 short	uch.
Replicate E	3 media		shope +	1 med	سز.	w/	3 gre	en f 1 6n	wa sha	
		9	1							
l-Days Post-Eme	rgence: Describe	shoot appearance:								
Replicate A	3 med	in plant	2							
Replicate B	a Sn	all plant	2 / his	aby	rown	8	host			
Replicate C	2 50	rall plan	ts	. /						
Replicate D	- 4 Sm	ell/ hid p	lents,	hus	bro	un	Shoot			
Replicate E	3 ned	15mall	plant	Some	e	De	nthus	45rou	m Shoot	5
nasure Shoot Hei	ght: ·		1st Seedling	2nd See	edling	3rc	Seedling	4th Seedling	5th Seedling	# Shoo
bave ground)		Replicate A	41 mm	40	mm	4	mm O	- mm	mr	7,9,10
		Replicate B	45 mm	34	mm			— mm	mr	5,6
		Replicate C	30 mm	3	7 mm		mm	mm	- m	11,4
		Replicate D	(e1 mm	4	D mm	-	35 mm	40 mm	m	14.8.7
		Replicate E	55 mm	45	mm		45 mm	40 mm	m	5,6,1
easure Shoot We	ight:		Tin Tare WL (mg)	Wet WI	(mg)	Dn	Wi. (mg)			, ,
(bave ground		Replicate A	1018.53	118			0.44			
		Replicate B	993.52	10.37	2.6	100	w.87.			
		Replicate C	999.72	low	.3	4	0.19			
		Replicate D	992.70	1154	4		4.37			
		Replicate E	1036.15	1231			77.30			
Describe root ap Replicate A Replicate B Replicate C	pearance:									
Replicate D						200	Seedling	4th Seedling	5th Seedling	7
Replicate E	th:		1st Seedling	2nd See	edlino					-
Replicate D Replicate E easure Root Leng	pth:	Replicate A	1st Seedling	2nd Se				mm	m	n
Replicate D	th:	Replicate A	115 mm		ma		ותיח	mm mm	mi	7
Replicate D Replicate E easure Root Leng	ith:	Replicate B	115 mm		ma		mm	mm	me	n
Replicate D Replicate E easure Root Leng	th:	Replicate B Replicate C	115 mm		ma		mm mm	mm	m	n
Replicate D Replicate E easure Root Leng	ith:	Replicate B Replicate C Replicate D	115 mm 100 mm 119 mm		ma ma ma		mm mm	mm mm	mi mi	n n
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Replicate D Replicate E easure Rool Leng		Replicate B Replicate C Replicate D	115 mm 100 mm 119 mm	WetW	ma ma ma ma		mm mm	mm mm	mi mi	n n
Replicate D Replicate E easure Rool Lenguagest root)		Replicate B Replicate C Replicate D	115 mor 100 mm 119 mm 87 mm		ma ma ma ma		mm mm mm mm	mm mm	mi mi	n n
Replicate D Replicate E easure Rool Lengungest root)		Replicate B Replicate C Replicate D Replicate E	115 mm 116 mm 87 mm 130 mm	WetW	ma ma ma ma	Dr	mm mm mm mm	mm mm	mi mi	n n
Replicate D Replicate E easure Root Leng		Replicate B Replicate C Replicate D Replicate E	115 mm 116 mm 87 mm 130 mm 171n Tare WL (mg)	WetW	ma ma ma ma	Dr. 102	mm mm mm mm y Wt. (mg) 36.40	mm mm	mi mi	n n
Replicate D Replicate E sasure Rool Lenguingest root)		Replicate B Replicate C Replicate D Replicate E Replicate B	115 mm 100 mm 117 mm 130 mm 130 mm 130 mm 1022.45	WetW	ma ma ma ma	On   102   10	mm mm mm mm y Wt. (mg) 36.40	mm mm	mi mi	n n

-13-

**CETIS Test Summary** 

Report Date:

18 Jul-06 1:29 PM

Test Link:

07-4737-3144/B154201psB

Plant Bloassay	y - Chronic					CH2M Hill
Test No:	03-0376-5225	Test Type:	Plant Chronic		Duration:	N/A
Start Date:	25 Jan-06	Protocol:	ASTM E1963-02 (	2002)	Species:	Poa sandbergii
Ending Date:	1	Dil Water:			Source:	
Setup Date:	25 Jan-06	Brine:				
Comments:	recalculated Height and Le	ength data J	luly 18, 2006			
Sample No:	18-1426-8954	Code:	B1542-01		Client:	
Sample Date:	31 Oct-05	Material:	Soil		Project:	
Receive Date:		Source:	Hanford			
Sample Age:	86d 0h	Station:				
Comments:	J10DW4, E274801					
Comparison S	ummary					
Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method .
04-6686-9248	% Germination	< 100	100	N/A	23.72%	Equal Variance t Two-Sample
03-4698-4423	Average Height (mm)	100	> 100	N/A	16.50%	Equal Variance t Two-Sample
10-5567-7574	Average AG Wt (Wet, mg	) < 100	100	N/A	27.27%	Equal Variance t Two-Sample
19-4244-1707	Average AG Wt (Dry, mg)	< 100	100	N/A	38.24%	Equal Variance t Two-Sample
02-5160-3380	Average Root Wt. (Wet, n	ng 100	> 100	N/A	41.42%	Equal Variance t Two-Sample
06-2774-2762	Average Root Wt. (Dry, m	g) < 100	100	N/A	45.60%	Equal Variance t Two-Sample
14-6818-7289	Average Total Wt (Wet, n	ng < 100	100	N/A	33.72%	Equal Variance t Two-Sample
13-2652-1747	Average Total Wt (Dry, mg	9) < 100	100	N/A	40.05%	Equal Variance t Two-Sample

Report Date:

18 Jul-06 1:29 PM

Test Link:

07-4737-3144/B154201psB

78 00111111111	tion Summary					,		
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.60000	0.40000	0.80000	0.08944	0.20000	33.33%
Average H	eight (mm) Summ	ary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	45.68	36.700	55.8	3.3695	7.5344	16.49%
100		5	41.390	33.5	46.25	2.2538	5.0396	12,18%
Average AC	Wt (Wet, mg) St	ummary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	63.903	41.475	82.338	7.1313	15.946	24.95%
100		5	40.525	19.54	55.457	6.0773	13.589	33.53%
Average AC	3 Wt (Dry, mg) Su	mmary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soll/S	5	12.351	7.9275	19.276	2.1347	4.7733	38.65%
100		5	7.2993	3.675	10.637	1.3763	3.0775	42.16%
Average Ro	oot Wt. (Wet, mg)	Summa	ry					
		Donn	Mean	Minimum	Maximum	SE	CD	CV
Conc-%	Control Type	Reps	mean	minimum	MAAIIMUM	SE	SD	CV
Conc-%	Artificial Soil/S	5	113.23	51.638	158.52	21.449	47.962	42.36%
0 100		5	113.23 72.356	51.638	158.52	21.449	47.962	42.36%
0 100	Artificial Soil/S	5	113.23 72.356	51.638	158.52	21.449	47.962	42.36%
0 100 Average Ro	Artificial Soil/S	5 5 Summar	113.23 72.356 y	51.638 40.920	158.52 111.72	21.449 13.274	47.962 29.681	42.36% 41.02%
0 100 Average Ro Conc-%	Artificial Soil/S  oot Wt. (Dry, mg) S  Control Type	5 5 Summar Reps	113.23 72.356 y Mean	51.638 40.920 Minimum	158.52 111.72 Maximum	21.449 13.274 SE	47.962 29.681 SD	42.36% 41.02% CV
0 100 Average Ro Conc-% 0 100	Artificial Soil/S  oot Wt. (Dry, mg) S  Control Type	5 5 Summar Reps 5 5	113.23 72.356 y Mean 7.8666 3.268	51.638 40.920 Minimum 3.78	158.52 111.72 Maximum 14.108	21.449 13.274 SE 1.8639	47.962 29.681 SD 4.1678	42.36% 41.02% CV 52.98%
0 100 Average Ro Conc-% 0 100	Artificial Soil/S  oot Wt. (Dry, mg) S  Control Type Artificial Soil/S  otal Wt (Wet, mg)	5 5 Summar Reps 5 5	113.23 72.356 y Mean 7.8666 3.268	51.638 40.920 Minimum 3.78	158.52 111.72 Maximum 14.108	21.449 13.274 SE 1.8639	47.962 29.681 SD 4.1678	42.36% 41.02% CV 52.98%
0 100 Average Ro Conc-% 0 100 Average To	Artificial Soil/S  oot Wt. (Dry, mg) S  Control Type  Artificial Soil/S	5 5 Summar Reps 5 5 Summa	113.23 72.356 y Mean 7.8666 3.268	51.638 40.920 Minimum 3.78 2.015	158.52 111.72 Maximum 14.108 4.6500	21.449 13.274 SE 1.8639 0.4968	47.962 29.681 SD 4.1678 1.1108	42.36% 41.02% CV 52.98% 33.99%
0 100 Average Ro Conc-% 0 100 Average To	Artificial Soil/S  cot Wt. (Dry, mg) S  Control Type Artificial Soil/S  ctal Wt (Wet, mg)  Control Type	5 5 Summar Reps 5 5 Summa Reps	113.23 72.356 y Mean 7.8666 3.268	51.638 40.920 Minimum 3.78 2.015	158.52 111.72 Maximum 14.108 4.6500	21.449 13.274 SE 1.8639 0.4968	47.962 29.681 SD 4.1678 1.1108	42.36% 41.02% CV 52.98% 33.99%
0 100 Average Ro Conc-% 0 100 Average To Conc-% 0 100	Artificial Soil/S  cot Wt. (Dry, mg) S  Control Type Artificial Soil/S  ctal Wt (Wet, mg)  Control Type	5 5 Summar Reps 5 5 Summa Reps 5 5	113.23 72.356 y Mean 7.8666 3.268 ry Mean 177.14 112.88	51.638 40.920 Minimum 3.78 2.015 Minimum 93.113	158.52 111.72 Maximum 14.108 4.6500 Maximum 240.86	21.449 13.274 SE 1.8639 0.4968 SE 26.086	47.962 29.681 SD 4.1678 1.1108 SD 58.331	42.36% 41.02% CV 52.98% 33.99% CV 32.93%
0 100 Average Ro Conc-% 0 100 Average To Conc-% 0 100	Artificial Soil/S  control Type Artificial Soil/S  otal Wt (Wet, mg) Control Type Artificial Soil/S  control Type Artificial Soil/S	5 5 Summar Reps 5 5 Summa Reps 5 5	113.23 72.356 y Mean 7.8666 3.268 ry Mean 177.14 112.88	51.638 40.920 Minimum 3.78 2.015 Minimum 93.113	158.52 111.72 Maximum 14.108 4.6500 Maximum 240.86	21.449 13.274 SE 1.8639 0.4968 SE 26.086	47.962 29.681 SD 4.1678 1.1108 SD 58.331	42.36% 41.02% CV 52.98% 33.99% CV 32.93%
0 100 Average Re Conc-% 0 100 Average To Conc-% 0 100 Average To	Artificial Soil/S  Control Type Artificial Soil/S  otal Wt (Wet, mg)  Control Type Artificial Soil/S	5 5 Summar Reps 5 5 Summa Reps 5 5	113.23 72.356 y Mean 7.8666 3.268 ry Mean 177.14 112.88	51.638 40.920 Minimum 3.78 2.015 Minimum 93.113 60.46	158.52 111.72 Maximum 14.108 4.6500 Maximum 240.86 167.17	21.449 13.274 SE 1.8639 0.4968 SE 26.086 18.747	47.962 29.681 SD 4.1678 1.1108 SD 58.331 41.919	42.36% 41.02% CV 52.98% 33.99% CV 32.93% 37.14%

**CETIS Test Summary** 

Report Date: Test Link:

18 Jul-06 1:29 PM

07-4737-3144/B154201psB

## **CETIS Test Summary**

% Germina	tion Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
100		0.60000	0.40000	0.40000	0.80000	0.80000
Average H	eight (mm) Detail					
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	50.6 /	41.8 🗸	55.8 ×	36.7000	43.5 ✓
100		43.7000	39.5	33.5	44	46.25
Average A	G Wt (Wet, mg) De	etail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	67.2900	55.1900	82.338	73.2233	41.4750
100		55.4567	19.54	38.2900	40.4250	48.9125
Average A	G Wt (Dry, mg) Del	tail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751
100		10.6366	3.67499	5.23001	6.6675	10.2875
Average R	oot Wt. (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
100		111.717	40.9200	44.38	83.545	81.2175
Average R	oot Wt. (Dry, mg) I	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4.295
100		4.65000	2.34500	2.01498	3.28499	4.045
Average To	otal Wt (Wet, mg)	Detail				
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	210.652	195.814	240.862	145.247	93.1125
100		167.173	60.46	82.6700	123.97	130.130
Average To	otal Wt (Dry, mg)	Detail				
	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Conc-%	Control Type					
Conc-%	Artificial Soll/S	23.9280	18.946	33.384	12.6066	12.2225

Analyst: 3~

Comparisons:

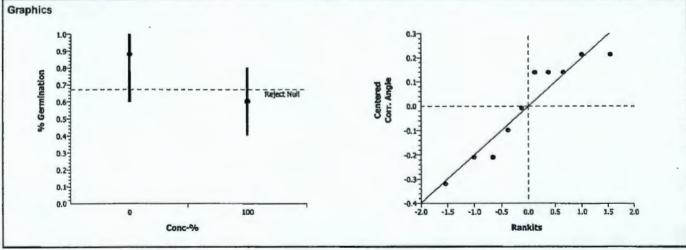
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Report Date:

18 Jul-06 1:29 PM 04-6686-9248/B154201psB

	•			
An	al	VS	is	

Endpoint		Ana	lysis Type		Sample Li	nk Cont	rol Link	Date Analyzed	Version	
% Germination		Cor	nparison		07-4737-31	144 07-47	37-3144	18 Jul-06 1:28 P	M CETISv1	.1.2
Method		Alt	H Data 1	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	t Two-Sample	C>	T Angula	ar (Corrected)		<100	100		N/A	23.72%
Group Compa	risons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	edi 100		2.36128	1.85955	0.0229	0.2455	9	Significant Effect		
ANOVA Table					<del></del>					
Source	Sum of	Squares	Mean Squa	are DF	F Statistic	c P-Valu	e	Decision(0.05)		
Between	0.24312	97	0.24313	1	5.58	0.0458	7	Significant Effect		
Error	0.34884	57	0.043606	8						
Total	0.59197	535	0.2867354	9						
ANOVA Assur	nptions									
Attribute.	Test			Statistic	Critical	P-Valu	ie	Decision(0.01)		
Variances	Varianc	e Ratio F		1.04816	23.15450	0.9647	3	Equal Variances		
Distribution	Shapiro	-Wilk W		0.88173		0.1366	0	Normal Distributio	n	
Data Summar	у			Origin	nal Data			Transf	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.17889	1.205	81 0.88608	1.34528	0.20635
100		5	0.60000	0.40000	0.80000	0.20000	0.893	96 0.68472	1.10715	0.21126



Approval:

Analyst:\_

Comparisons:

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Report Date:

18 Jul-06 1:29 PM

Analysis:

03-4698-4423/B154201psB

Tiditt Biodassi	ay - Chronic									CH2M F
Endpoint			ysis Type		Sample Lir	k Cont	rol Link	Date Analyzed	Vers	ion
Average Heig	ght (mm)	Com	parison		07-4737-31	44 07-47	37-3144	18 Jul-06 1:28	PM CETI	Sv1.1.2
Method		Alt	H Data Tr	ansform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	e t Two-Sample	C > '	T Untrans	formed		100	>100	1	N/A	16.50%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		1.05828	1.85955	0.1604	7.5381	7	Non-Significant E	ffect	
ANOVA Table	•									
Source	Sum of S	Squares	Mean Squar	e DF	F Statistic	P-Valu	e	Decision(0.05)		
Between	46.01024		46.01024	1	1.12	0.3208		Non-Significant E	ffect	
Error	328.66		41.0825	8		5.0200	-			
Total	374.6702	212	87.092735	9	-					
ANOVA Assu	ımptions									
Attribute	Test			Statistic	Critical	P-Valu	e	Decision(0.01)		
Variances	Variance	Ratio F	2	2.23510	23.15450	0.4551	5	Equal Variances		
Distribution	Shapiro-	Wilk W	(	0.96425		0.8330	6	Normal Distributi	on	
Data Summa	ry			Origin	nal Data			Trans	formed Data	а
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimun	n Maximu	ım SD
0	Artificial Soil/S	5	45.68	36.7	55.8	7.5344				
100		5	41.390	33.5	46.25	5.0396				
Average Height (mm) Average Height (mm)						Untransformed 2.5		,,,,,	<i>,</i> /.	
-10	0	Conc-	100			-10 -2.0	-1.5	-1.0 -0.5 0.0 Rankits	0.5 1.0 1	1.5 2.0

Comparisons:

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Report Date:

18 Jul-06 1:29 PM

Analysis:

10-5567-7574/B154201psB

Market 1		Amat	ale Tues		Commist	ale Carre	rallist.	Date Analyzed	Version	
Endpoint	Nt (Wet, mg)	Comp	sis Type		Sample Li 07-4737-31		rol Link 737-3144	Date Analyzed 18 Jul-06 1:28 Pt		
Average AG V	/vi (vvei, mg)	Comp	arison		01-4131-3	144 07-47	37-3144	18 Jul-08 1.26 F1	W CE11341.1.2	
Method		Alt H		ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variand	ce t Two-Sample	C>T	Untrans	sformed		<100	100		N/A	27.27%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		2.49513	1.85955	0.0186	17.423	13	Significant Effect		
ANOVA Table	e									
Source	Sum of S	Squares	Mean Squa	re DF	F Statistic	c P-Valu	10	Decision(0.05)		
Between	1366.377		1366.377	1	6.23	0.0372		Significant Effect		
Ептог	17 55.801		219.4752	8				-		
Total	3122.178		1585.852	9	_					
ANOVA Assu	umptions									
Attribute	Test			Statistic	Critical	P-Valu	10	Decision(0.01)		
Variances	Variance	Ratio F		1.37694	23.15450	0.7641	12	Equal Variances		
Distribution	Shapiro-	Wilk W		0.93736		0.5240	)6	Normal Distribution	n	
Data Summa	ary			Origin	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial Soil/S		63.903	41.475	82,338	15.946				
100		5	40.525	19.54	55.457	13.589				
Graphics									water and a second	
13						207		i	1.	
Average AG Wit (Wet, mg)						15			9	
1 1						8 10			*	
2 1						Centered Untransformed		-		
A 1-						anst o				
¥ 1-						2 =		•/		
62						3		/		
2 0						-10		/		
						-15-		/		
0						-20		. !		
					٠	-25	1	1		
				1				-1.0 -0.5 0.0 0.	5 1.0 1.5	2.0
0 -	0		100			-2.0	-1.5	-1.0 -0.5 0.0 0.	5 1.0 1.5	2.0

Comparisons:

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Report Date: Analysis: 18 Jul-06 1:29 PM 19-4244-1707/B154201psB

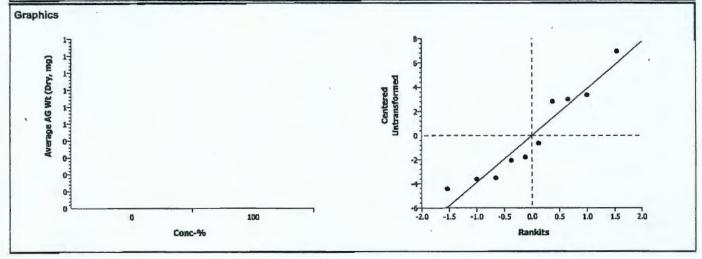
Plant Bioassay - Chronic									CH2M Hi
Endpoint	Analysi	s Type	Sample L	ink	Con	trol Link	Date Analyzed		Version
Average AG Wt (Dry, mg)	Compar	ison	· 07-4737-	3144	07-4	737-3144	18 Jul-06 1:28	PM	CETISv1.1.2
Method	Alt H	Data Transform	Zeta	NO	EL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C>T	Untransformed		<10	0	100		N/A	38.24%

<b>Group Com</b>	pariso	ns						
Control	VS	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)	
Artificial Soil	/Sedi	100	1.98886	1.85955	0.0410	4.72307	Significant Effect	

ANOVA Table							•
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)	
Between	63.79421	63.79421	1	3.96	0.08192	Non-Significant Effect	
Ептог	129.0223	16.12778	8				
Total	192.816475	79.921995	9	_			

ANOVA ASSUM	puons					
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	
Variances	Variance Ratio F	2,40572	23.15450	0.41603	Equal Variances	
Distribution	Shapiro-Wilk W	0.91144		0.29103	Normal Distribution	

Data Sumn	nary			Origin	nal Data			Transfo	rmed Data	•
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	12.351	7.9275	19.276	4.7733				
100		5	7.2993	3.675	10.637	3.0775				



Comparisons:

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Report Date:

18 Jul-06 1:29 PM

Analysis:

02-5160-3380/B154201psB

JE 110 / III CI	,010 20							Analysis:	02-5160-3380	375104201
Plant Bioassay -	Chronic									CH2M I
Endpoint		Anal	ysis Type		Sample L	ink Cor	ntrol Link	Date Analyzed	Version	
Average Root Wt.	(Wet, mg)	Com	parison		07-4737-3	144 07-	4737-3144	18 Jul-06 1:29 PM	M CETISV	1.1.2
Method		Alt I	H Data 1	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t T	wo-Sample	C>.	T Untran	sformed		100	>100	1	N/A	41.42%
Group Compariso	ons			_						
Control vs	Conc-%		Statistic	Critical	P-Value	MSD	1	Decision(0.05)		
Artificial Soil/Sedi	100		1.62059	1.85955	0.0719	46.90	)6 N	Ion-Significant Eff	ect	
ANOVA Table										
Source	Sum of	Squares	Mean Squa	are DF	F Statisti	c P-Va	lue C	Decision(0.05)		
Between	4177.597		4177.597	1	2.63	0.143		Ion-Significant Eff	ect	
Error	12725.4		1590.675	8						
Total	16902.99	961	5768.2716	9	_					
ANOVA Assumpt	ions				<del> </del>					
Attribute	Test			Statistic	Critical	P-Va	lue C	Decision(0.01)		
Variances	Variance	Ratio F		2.61121	23.15450			qual Variances		
Distribution	Shapiro-			0.91516		0.318		Normal Distribution	1	
Data Summary				Origi	nal Data			Transfo	rmed Data	
Conc-% Co	ntrol Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
	ificial Soil/S	5	113.23	51.638	158.52	.47.962				
100		5	72.356	40.920	111.72	29.681				
Average Root Wt. (Wet, mg)						Centered Untransformed	·	• • •	.,,	

0.5 1.0 1.5 2.0

-1.5 -1.0 -0.5 0.0

Rankits

100

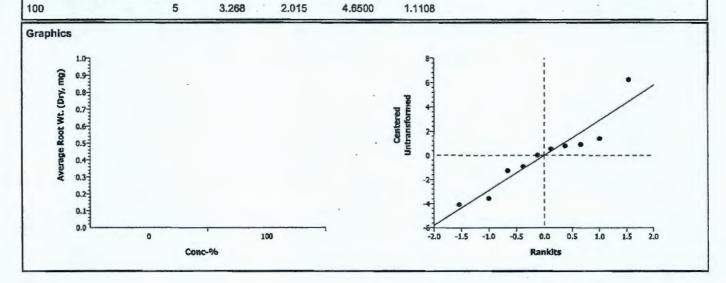
Conc-%

Comparisons:

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Report Date: Analysis: 18 Jul-06 1:29 PM 06-2774-2762/B154201psB

Plant Bioassay	- Chronic	·								СН2М Н
Endpoint		Ana	lysis Type		Sample L	nk Cont	rol Link	Date Analyzed	Version	
Average Root V	Vt. (Dry, mg)	Com	nparison		07-4737-3	144 07-47	737-3144	18 Jul-06 1:29 PM	A CETISV	.1.2
Method		Alt	H Data 1	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	t Two-Sample	C>	T Untran	sformed		<100	100		N/A	45.60%
Group Compar	risons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Se	edi 100		2.38399	1.85955	0.0221	3.5869	7	Significant Effect		
ANOVA Table										
Source	Sum of	Squares	Mean Squa	are DF	F Statisti	c P-Valu	ie	Decision(0.05)		
Between	52.86784	1	52.86784	1	5.68	0.0442	7	Significant Effect		
Error	74.41687	7	9.302109	8						
Total	127.2847	1	62.169949	9						
ANOVA Assum	ptions									
Attribute	Test			Statistic	Critical	P-Valu	ie	Decision(0.01)		
Variances	Variance	Ratio F		14.07658	23,15450	0.0252	23	Equal Variances		
Distribution	Shapiro-	Wilk W		0.91314		0.3032	4	Normal Distribution	1	
Data Summary				Origi	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	ŞD	Mea	n Minimum	Maximum	ŞD
0	Artificial Soil/S	5	7.8666	3.78	14.108	4.1678				
400			2 200	2045	4 0500	4 4400				



Approval:

Comparisons:

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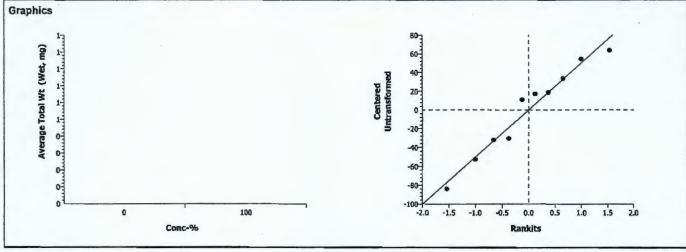
Report Date:

18 Jul-06 1:29 PM

Analysis:

14-6818-7289/B154201psB

Endpoint		Ana	lysis Type	and the state of t	Sample Li	nk Contro	Link	<b>Date Analyzed</b>	Version	1
Average Total W	/t (Wet, mg)	Con	parison		07-4737-31	44 07-473	7-3144	18 Jul-06 1:29 P	M CETISV	1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL 1	LOEL	Toxic Units	ChV	PMSD
Equal Variance	Two-Sample	C>	T Untrai	nsformed		<100	100		N/A	33.72%
Group Compar	isons									
Control v	s Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sed	di 100		2.00028	1,85955	0.0402	59.7359		Significant Effect		
ANOVA Table										
Source	Sum of S	Squares	Mean Squ	are DF	F Statistic	c P-Value		Decision(0.05)		
Between	10322.33	3	10322.33	1	4.00	0.08048		Non-Significant E	ffect	
Ептог	20638.88	3	2579.86	8						
Total	30961.21	19	12902.189	9						
ANOVA Assum	ptions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		1.93632	23.15450	0.53790		Equal Variances		
Distribution	Shapiro-	Wilk W		0.95158		0.68718		Normal Distribution	on .	
Data Summary				Origi	nal Data			Transf	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0 4	Artificial Soil/S	5	177.14	93.113	240.86	58.331				
100		5	112.88	60.46	167.17	41.919				



Approval:

Comparisons:

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Report Date:

18 Jul-06 1:29 PM

Analysis:

13-2652-1747/B154201psB

Plant Bioassay - Chronic							СН2М Н
Endpoint .	Analysis Type		Sample Li	nk Control	Link Date Analyzed	Version	
verage Total Wt (Dry, mg)	Comparison		07-4737-3	144 07-4737	7-3144 18 Jul-06 1:29 Pl	M CETISV	.1.2
fethod	Alt H Data	Transform	Zeta	NOEL L	OEL Toxic Units	ChV	PMSD
qual Variance t Two-Sample	C > T Untra	nsformed		<100 1	00	N/A	40.05%
Froup Comparisons							
Control vs Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)		
Artificial Soil/Sedi 100	2.21643	1.85955	0.0288	8.09629	Significant Effect		
ANOVA Table							•
Source Sum of Squ	ares Mean Squ	are DF	F Statisti	c P-Value	Decision(0.05)		
Between 232.8113	232.8113	1	4.91	0.05750	Non-Significant Eff	fect	
Error 379.1292	47.39115	8					
otal . 611.940475	280.20242	9					
ANOVA Assumptions							
Attribute Test		Statistic	Critical	P-Value	Decision(0.01)		
/ariances Variance Ra	tio F	4.53128	23.15450	0.17247	Equal Variances		
Distribution Shapiro-Wilk	W	0.93905		0.54254	Normal Distribution	n	
Data Summary		Origi	nal Data		Transfo	rmed Data	
Conc-% Control Type Co	ount Mean	Minimum	Maximum	SD	Mean Minimum	Maximum	SD
Artificial Soil/S 5	20.217	12.223	33.384	8.8117			
00 5	10.567	6.02	15.287	4.1395			
Average Total Wt (Dry, mg)				Centered Untransformed	,	·/	

Rankits

Conc-%

#### BLUEGRASS GROWTH TEST

			Sar	nple ID: E280101-	SO12	B1542-07		
				# seeds germinated	# slive.		P	H
ONC.	REPLICATE	PRE-EMERGENCE (12 days after planting)	@ EMERGENCE (14 days after planting)	(16 days after		14-DAYS POST- EMERGENCE (28 days after plenting)	INITIAL (@ planting)	FINAL (28 days after planting)
	Α	3	4.	45	5 5	5		
00%	В	2	3	3 3	3 3	3		
00 %	c	1	2		3 1	1	7.1	
	D	4	6	67	7 7-25	5	,,,	7.1
	E		1	1 2	3 3	2		
icate A icate B icate C icate D icate E	I medium I m	+ 4 mets  + 1 small  m fn god  + 4 med  cour 1 y p  shoot appearance:  4 redim  medium  medium  Replicate A	in god shype	Scod d  L / brow  Good  K Sood  Znd Seedling  um 75 mm	e shout so - I material, single	on Small	er one  Sih Seedling	2 1/15
		Replicate B	31 "	m 43 mm	12 mm	mm	ma	2,4,12
		Replicate C	6/ 11	mm — mm	— mm		mn	16
		Replicate D	76 "	m 5% mm	65 mm	29 mm	35 mm	10,9.11.12.
		· Replicate E	44 "	m 7.2 mm	mm	mm	mn	8,14
Shoot We	alahti		Tin Tare Wt. (mg		Dry WL (mg)			
ground)		Replicate A	989.24	1443.6	1073.98			
groundy		Replicate B	1007.44	- 1073,4	1014.75			
		Replicate C	961.0	5 1076 1	485.85			
		Replicate D	1003.3	6 1312 7	1070.68			
		Replicate E	975 87	1154.5	1005.71			
ribe root a dicate A dicate B	ppearance:							
licate D			400	0-10-1	240.00	40.0	50° 0 0	7
icale D licale E	miles.		1st Seedling	2nd Seedling	3rd Seedling	4th Seedling	5th Seedling	
licate D licate E Root Len	gth:	D-steers 4		nm mm	mm	mm	m	7
licate D licate E Root Len	gth:	Replicate A	1					11)
licate D licate E Root Len	gth:	Replicate B	100 1	nm mm		min	mr	
licate D licate E Root Len	gth:	Replicate B Replicate C	100 1	mm mm	mm	mm	m	7
Icale D Icale E Rool Len	gth:	Replicate B  Replicate C  Replicate D	100 n PCi	nan man nan man	mm	mm	mr	n
icale D Icale E Rool Len	gth:	Replicate B Replicate C	100 n PCi	mm mm	mm	mm	m	n
icale D icale E Root Len		Replicate B  Replicate C  Replicate D	100 n PCi	1100 mm 1000 mm 1000 mm	mm	mm	mr	n
Ilicate D Ilicate E Root Len root)		Replicate B  Replicate C  Replicate D	100 m	1100 mm 1000 mm 1000 mm	mm mm	mm	mr	n
Ilicate D Ilicate E Root Len root)		Replicate B Replicate C Replicate D Replicate E Replicate A	100 m	nm mm nm mm nm mm nm mm	mm mm mm	mm	mr	n
olicate D olicate E e Root Len i root)		Replicate B Replicate C Replicate D Replicate E  Replicate A Replicate B	100 m	mm	Dry Wt. (mg)	mm	mr	n
olicate D olicate E e Root Len t root) e Root Weit		Replicate B Replicate C Replicate D Replicate E  Replicate B Replicate B Replicate C	100 m 101 m 100 m 140 m Tin Tare WL (m 982.50	mm	Dry Wi. (mg) 1024, 49 9.92, 50	mm	mr	n
licate D licate E Root Len root)		Replicate B Replicate C Replicate D Replicate E  Replicate A Replicate B	100 m 101 m 100 m 140 m Tin Tare WL (m 982.50	mm	00 mm  Dry Wi. (mg)  1024, 49  993, 50	mm	mr	n

**CETIS Test Summary** 

Report Date:

18 Jul-06 2:17 PM

Test Link:

16-8985-7214/B154202psB

Plant Bioassay	y - Chronic					CH2M His
Test No: Start Date: Ending Date:	25 Jan-06 P		Plant Chronic ASTM E1963-02 (2	002)	Duration: Species: Source:	N/A Poa sandbergil
Setup Date:	25 Jan-06 B	rine:				
Comments:	recalculated Height and Ler	igth data J	luly 18, 2006			
Sample No:	07-3307-9513 C	ode:	B1542-02		Client:	
Sample Date:	08 Nov-05	laterial:	Soil		Project:	
Receive Date:	S	ource:	Hanford			
Sample Age:	78d 0h S	tation:				
Comments:	J10DV4, J10DV5, J10DV6, E280101	J10DV7, 、	J10DV8.			
Comparison S	ummary					
Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-8154-0700	% Germination	100	> 100	N/A	37.51%	Equal Variance t Two-Sample
06-2016-8600	Average Height (mm)	100	> 100	N/A	35.14%	Equal Variance t Two-Sample
02-5596-9334	Average AG Wt (Wet, mg)	100	> 100	N/A	49.90%	Equal Variance t Two-Sample
14-0494-7651	Average AG Wt (Dry, mg)	100	> 100	N/A	59.46%	Equal Variance t Two-Sample
10-5875-1041	Average Root Wt. (Wet, m	g 100	> 100	N/A	55.35%	Equal Variance t Two-Sample
07-0264-8106	Average Root Wt. (Dry, mg	100	> 100	N/A	62.43%	Equal Variance t Two-Sample
06-1145-5351	Average Total Wt (Wet, mg	100	. > 100	N/A	51.32%	Equal Variance t Two-Sample
06-7364-8671	Average Total Wt (Dry, mg)	100	> 100	NA	59.60%	Equal Variance t Two-Sample

Approval:

### **CETIS Test Summary**

Report Date: Test Link: 18 Jul-06 2:17 PM

16-8985-7214/B154202psB

% Germination Summary Minimum Maximum SD CV Conc-% **Control Type** Reps Mean SE Artificial Soil/S 5 0.88000 0.60000 1.00000 0.08000 0.17889 0 20.33% 0.64000 1.00000 100 0.20000 0.16000 0.35777 55.90% Average Height (mm) Summary Conc-% **Control Type** Reps Mean Minimum Maximum SE SD CV Artificial Soil/S 45.68 36,700 55.8 3.3695 7.5344 16,49% 0 100 5 55.3 28.700 78 7.9481 17.772 32.14% Average AG Wt (Wet, mg) Summary Conc-% Control Type Mean Minimum Maximum SE SD CV Artificial Soil/S 63.903 41,475 0 5 82.338 7,1313 15.946 24.95% 100 76.157 23.653 115.05 15.595 34.870 45.79% Average AG Wt (Dry, mg) Summary Conc-% **Control Type** Reps Maximum CV Mean Minimum SE SD Artificial Soil/S 12.351 19.276 0 5 7.9275 2.1347 4.7733 38.65% 100 5 14.852 4.1033 24.8 3.3228 7.4301 50.03% Average Root Wt. (Wet, mg) Summary Control Type CV Conc-% Reps Mean Minimum Maximum SE SD Artificial Soil/S 5 113.23 51.638 0 158.52 21,449 47.962 42.36% 100 5 122.76 46.4 202.31 25.995 58.126 47.35% Average Root Wt. (Dry, mg) Summary Conc-% **Control Type** Reps Minimum Maximum Mean SE SD CV 0 Artificial Soil/S 5 7.8666 3.78 14,108 1.8639 4.1678 52.98% 100 6.9781 2.3667 5 13.37 1.8708 4.1833 59.95% Average Total Wt (Wet, mg) Summary Conc-% Control Type Minimum Maximum SE SD CV Artificial Soll/S 5 177.14 93.113 240.86 26.086 0 58.331 32.93% 100 198.92 70.053 5 317.36 41.348 92,456 46.48% Average Total Wt (Dry, mg) Summary Conc-% **Control Type** Reps Mean Minimum Maximum SE SD CV

0

100

Artificial Soil/S

5

5

20.217

21.830

12.223

6.47

33,384

38.17

3.9407

5.1432

8.8117

11.500

43.58%

52.68%

Report Date:

18 Jul-06 2:17 PM

Test Link:

16-8985-7214/B154202psB

% Germina	tion Detail						
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000	
100		1.00000	0.60000	0.20000	1.00000	0.40000	
Average H	eight (mm) Detail						
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Artificial Soil/S	50.6	41.8	55.8	36.7000	43.5	
100		56.2000	28.7000	61	52.6	78	
Average AC	Wt (Wet, mg) De	etail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Artificial Soil/S	67.2900	55.1900	82.338	73,2233	41.4750	
100		90.872	23.6533	115.05	61.868	89.34	
Average AC	3 Wt (Dry, mg) Def	ail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751	
400		16.948	4.10333	24.8	13.4640	14.9450	
100		10.540	4.10000	24.0	13.4040	14.5400	
	oot Wt. (Wet, mg)		4.10000	24.0		14,3400	
	oot Wt. (Wet, mg)		Rep 2	Rep 3	Rep 4	Rep 5	
Average Ro		Detail					
Average Ro	Control Type	Detail Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
Average Ro Conc-% 0 100	Control Type	Detail Rep 1 143,362 130.632	Rep 2	Rep 3 158.524	Rep 4 72.0233	Rep 5	
Average Ro Conc-% 0 100	Control Type Artificial Soil/S	Detail Rep 1 143,362 130.632	Rep 2	Rep 3 158.524	Rep 4 72.0233	Rep 5	
Average Ro Conc-% 0 100 Average Ro	Control Type Artificial Soil/S  oot Wt. (Dry, mg) I	Detail Rep 1 143,362 130.632 Detail	Rep 2 140.624 46.4	Rep 3 158.524 202.31	Rep 4 72.0233 92.416	Rep 5 51.6375 142.065	
Average Ro Conc-% 0 100 Average Ro Conc-%	Control Type Artificial Soil/S  pot Wt. (Dry, mg) I Control Type	Detail Rep 1 143.362 130.632 Detail Rep 1	Rep 2 140.624 46.4 Rep 2	Rep 3 158.524 202.31 Rep 3	Rep 4 72.0233 92.416 Rep 4	Rep 5 51.6375 142.065 Rep 5	
Average Ro Conc-% 0 100 Average Ro Conc-% 0	Control Type Artificial Soil/S  pot Wt. (Dry, mg) I Control Type	Rep 1 143,362 130,632 Detail Rep 1 8.75601 8.39000	Rep 2 140.624 46.4 Rep 2 8.39399	Rep 3 158.524 202.31 Rep 3 14.108	Rep 4 72.0233 92.416  Rep 4 3.77999	Rep 5 51.6375 142.065  Rep 5 4.295	
Average Ro Conc-% 0 100 Average Ro Conc-% 0	Control Type Artificial Soil/S  oot Wt. (Dry, mg) I  Control Type Artificial Soil/S	Rep 1 143,362 130,632 Detail Rep 1 8.75601 8.39000	Rep 2 140.624 46.4 Rep 2 8.39399 2.36666	Rep 3 158.524 202.31 Rep 3 14.108	Rep 4 72.0233 92.416  Rep 4 3.77999	Rep 5 51.6375 142.065  Rep 5 4.295	
Average Ro Conc-% 0 100 Average Ro Conc-% 0 100 Average To	Control Type Artificial Soil/S  Dot Wt. (Dry, mg) I Control Type Artificial Soil/S  Dtal Wt. (Wet, mg)	Rep 1 143,362 130,632 Detail Rep 1 8.75601 8.39000 Detail	Rep 2 140.624 46.4 Rep 2 8.39399	Rep 3 158.524 202.31 Rep 3 14.108 13.37	Rep 4 72.0233 92.416  Rep 4 3.77999 4.75400	Rep 5 51.6375 142.065  Rep 5 4.295 6.01001	
Average Ro Conc-% 0 100 Average Ro Conc-% 0 100 Average To Conc-%	Control Type Artificial Soil/S  Dot Wt. (Dry, mg) I Control Type Artificial Soil/S  Dtal Wt. (Wet, mg) Control Type	Rep 1 143,362 130,632 Detail Rep 1 8,75601 8,39000 Detail Rep 1	Rep 2 140.624 46.4 Rep 2 8.39399 2.36666	Rep 3 158.524 202.31 Rep 3 14.108 13.37	Rep 4 72.0233 92.416  Rep 4 3.77999 4.75400	Rep 5 51.6375 142.065  Rep 5 4.295 6.01001	
Average Ro Conc-% 0 100 Average Ro Conc-% 0 100 Average To Conc-% 0 100	Control Type Artificial Soil/S  Dot Wt. (Dry, mg) I Control Type Artificial Soil/S  Dtal Wt. (Wet, mg) Control Type	Rep 1 143,362 130,632 Detail Rep 1 8.75601 8.39000 Detail Rep 1 210,652 221,504	Rep 2 140.624 46.4  Rep 2 8.39399 2.36666  Rep 2 195.814	Rep 3 158.524 202.31 Rep 3 14.108 13.37 Rep 3 240.862	Rep 4 72.0233 92.416  Rep 4 3.77999 4.75400  Rep 4 145.247	Rep 5 51.6375 142.065  Rep 5 4.295 6.01001  Rep 5 93.1125	
Average Ro Conc-% 0 100 Average Ro Conc-% 0 100 Average To Conc-% 0 100	Control Type Artificial Soil/S  Control Type Artificial Soil/S  Otal Wt (Wet, mg) Control Type Artificial Soil/S  Otal Wt (Wet, mg) Control Type Artificial Soil/S	Rep 1 143,362 130,632 Detail Rep 1 8.75601 8.39000 Detail Rep 1 210,652 221,504	Rep 2 140.624 46.4  Rep 2 8.39399 2.36666  Rep 2 195.814	Rep 3 158.524 202.31 Rep 3 14.108 13.37 Rep 3 240.862 317.360	Rep 4 72.0233 92.416  Rep 4 3.77999 4.75400  Rep 4 145.247	Rep 5 51.6375 142.065  Rep 5 4.295 6.01001  Rep 5 93.1125	
Average Ro Conc-% 0 100 Average Ro Conc-% 0 100 Average To Conc-% 0 100 Average To	Control Type Artificial Soil/S  cot Wt. (Dry, mg) I Control Type Artificial Soil/S  ctal Wt (Wet, mg) Control Type Artificial Soil/S	Rep 1 143,362 130.632 Detail Rep 1 8.75601 8.39000 Detail Rep 1 210.652 221.504 Detail	Rep 2 140.624 46.4  Rep 2 8.39399 2.36666  Rep 2 195.814 70.0533	Rep 3 158.524 202.31 Rep 3 14.108 13.37 Rep 3 240.862	Rep 4 72.0233 92.416  Rep 4 3.77999 4.75400  Rep 4 145.247 154.284	Rep 5 51.6375 142.065  Rep 5 4.295 6.01001  Rep 5 93.1125 231.405	

**CETIS Test Summary** 

**Analysis Type** 

Comparisons:

Page 1 of 8

CH2M Hill

18 Jul-06 2:17 PM

Report Date:

Date Analyzed

09-8154-0700/B154202psB

Version

OL 113 Analysis Detail	Analysis	: 09-8154-070
Plant Bioassay - Chronic		

% Germination	Comparison		16-8985-7	214 16-	3985-7214	18 Jul-06 2:17	PM CET	TISv1.1.2
Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C>T	Angular (Corrected)		100	>100	1	N/A	37.51%

Sample Link

**Control Link** 

#### **Group Comparisons**

Control	VS	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)	
Artificial Soi	l/Sedi	100	1.30924	1.85955	0.1134	0.37044	Non-Significant Effect	

#### **ANOVA Table**

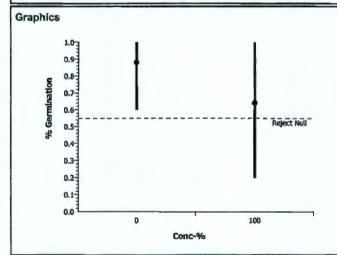
**Endpoint** 

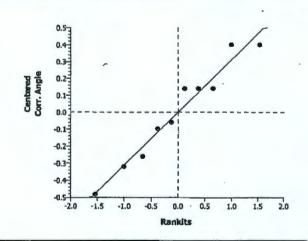
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)	
Between	0.1700585	0.170059	1	1.71	0.22680	Non-Significant Effect	
Error	0,7936922	0.099212	8				
Total	0.96375073	0.2692700	9				

#### **ANOVA Assumptions**

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	
Variances	Variance Ratio F	3.65997	23.15450	0.23677	Equal Variances	
Distribution	Shapiro-Wilk W	0.94392		0.59737	Normal Distribution	•

Data Summary				Origi	nal Data		Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soll/S	5	0.88000	0.60000	1.00000	0.17889	1.20581	0.88608	1.34528	0.20635
100		5	0.64000	0.20000	1.00000	0.35777	0.94500	0.46365	1.34528	0.39477





Comparisons:

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Report Date:

18 Jul-06 2:17 PM

Analysis:

06-2016-8600/B154202psB

Plant Bloass	ay - Chronic									CH2M F
Endpoint			lysis Type		Sample Li		tro! Link	Date Analyzed	Versio	n
Average Hei	ght (mm)	Com	parison		16-8985-72	214 16-8	985-7214	18 Jul-06 2:17 P	M CETIS	v1.1.2
Method Alt I		H Data	Data Transform		NOEL	LOEL	Toxic Units	ChV	PMSD	
Equal Varian	ce t Two-Sample	C > .	T Untrar	nsformed		100	>100	1	N/A	35.14%
Group Comp	parisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/	Sedi 100		-1.1144	1.85955	0.8513	16.05	31	Non-Significant El	ffect	
ANOVA Tabl	le									
Source	Sum of	Squares	Mean Squ	are DF	F Statisti	c P-Val	ue	Decision(0.05)		
Between	231.361		231.361	. 1	1.24	0.297		Non-Significant El	ffect	
Error	1490.508	3	186.3135	8						
Total	1721.868	396	417.67451	9						
ANOVA Ass	umptions					-	<b>-</b>			
Attribute	Test			Statistic	Critical	P-Val	ue	Decision(0.01)		
Variances	Variance	Ratio F		5.56415	23.15450			Equal Variances		
Distribution Shapiro-Wilk W			0.95255		0.698	75	Normal Distribution	on		
Data Summa	ary			Origi	nal Data			Transf	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximun	n SD
0	Artificial Soil/S	5	45.68	36.7	55.8	7.5344				
100		5	55.3	28.7	78	17.772				
Average Height (mm)						Cembered 10-10-10-10-10-10-10-10-10-10-10-10-10-1	<b>!</b>	••••	<i>, , , , , , , , , ,</i>	
01	0	Conc-s	100 %s.	0		-30 <del>-1</del> -2.	0 -1.5	-1.0 -0.5 0.0 0 Rankits	.5 1.0 1.5	2.0

Analyst:\_

Comparisons:

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Report Date:

18 Jul-06 2:17 PM

Analysis:

02-5596-9334/B154202psB

Endosint	Analysis Type	Sample Link C	Control Link Date Analyzed	Version
Endpoint Average AG Wt (Wet, mg)	Comparison		6-8985-7214 18 Jul-06 2:17 F	
Method	Alt H Data Transform	Zeta NOEL	LOEL Toxic Units	ChV PMSD
Equal Variance t Two-Sample	C>T Untransformed	100	>100 1	N/A 49.90%
	OF T CHARLOTTING	100	100	
Group Comparisons				
Control vs Conc-%	Statistic Critical		SD Decision(0.05)	
Artificial Soil/Sedi 100	-0.7146 1.85955	0.7524 31	.8871 Non-Significant E	ffect
ANOVA Table				
Source Sum of Squ	ares Mean Square DF	F Statistic P-	Value Decision(0.05)	
Between 375.3645	375.3645 1	0.51 0.4	19519 Non-Significant E	ffect
Error 5880.917	735.1146 8			
Total 6256.28152	1110.4792 9			
ANOVA Assumptions				
Attribute Test	Statistic	Critical P-	Value Decision(0.01)	
Variances Variance Rai			15878 Equal Variances	
Distribution Shapiro-Wilk			75167 Normal Distribution	on
Data Summary		iginal Data	Trans	formed Data
	unt Mean Minimu	n Maximum SD	Mean Minimum	Maximum SD
0 Artificial Soil/S 5	63.903 41.475	82.338 15.94		
100 5	76.157 23.653	115.05 34.8	70	
Average AG WR (Wet, mg)		Centered Untransformed	400 300 200 100 100 200 300 400	<i>(</i> -

-31-

**CETIS Analysis Detail** 

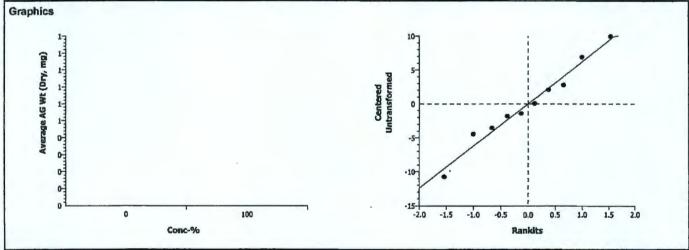
Comparisons:

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Report Date: Analysis: 18 Jul-06 2:17 PM 14-0494-7651/B154202psB

CHOM IS

Endpoint		Anal	ysis Type		Sample Lir	k Control	Link	Date Analyzed	Version	
	verage AG Wt (Dry, mg) Com		parison				16-8985-7214 18 Jul-06 2		M CETISV	1.1.2
Method		Alt I	H Data 1	<b>Fransform</b>	Zeta	NOEL L	.OEL	Toxic Units	ChV	PMSD
Equal Variance t	Two-Sample	C > 7	T Untrar	sformed		100 >	100	1	N/A	59.46%
Group Comparl	sons									
Control v	s Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sec	ii 100		-0.6333	1.85955	0.7279	7.34419		Non-Significant Ef	fect	
ANOVA Table										
Source	Sum of	Squares	Mean Squa	are DF	F Statistic	P-Value		Decision(0.05)		
Between	15.64047	7	15.64047	1	0.40	0.54421		Non-Significant Ef	fect	
Error	311.963		38.99537	8						
Total	327.6034	419	54.635837	9						
ANOVA Assum	ptions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		2.42296	23.15450	0.41235		Equal Variances		
Distribution	Shapiro-	Wilk W		0.98225		0.97606		Normal Distributio	n	_
Data Summary				Origi	nal Data			Transfe	ormed Data	
Conc-% C	ontrol Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0 A	rtificial Soil/S	5	12.351	7.9275	19.276	4.7733				
100		5	14.852	4.1033	24.8	7.4301				



Comparisons:

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Report Date:

18 Jul-06 2:17 PM

Analysis:

10-5875-1041/B154202psB

		Arral	unin Turne		Sample Lin	k Conta	ol Link	Date Analyzed	Versi	ion
Endpoint Average Root	Wt. (Wet, mg)		ysis Type parison		16-8985-72°		85-7214	18 Jul-06 2:17 F		Sv1.1.2
			- form	7	NOEL	LOEL	Toxic Units	ChV	PMSD	
Method	e t Two-Sample	C>				100	>100	1	N/A	55.35%
Equal variance	e t Two-Sample	0,	Onuarisio	ятнец		100	7100		TWO.	00.0070
Group Compa	arisons									
Control	vs Conc-%			Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	edi 100		-0.2828	1.85955	0.6077	62.6698	3	Non-Significant E	ffect	
ANOVA Table										
Source	Sum of S	Squares	Mean Square	DF	F Statistic	P-Value	•	Decision(0.05)		
Between	227.0727	-	227.0727	1	0.08	0.78452		Non-Significant E	ffect	
Error	22716		2839.5	8						
Total	22943.07	766	3066.5732	9						
ANOVA Assu	mptions					******				
Attribute	Test		St	atistic	Critical	P-Value	е	Decision(0.01)		
Variances	Variance	Ratio F		46872	23.15450	0.71863		Equal Variances		
Distribution	Shapiro-					0.75234		Normal Distributi	on	
Data Summar	у			Origin	nal Data			Trans	formed Data	a
Conc-%	Control Type	Count	Mean	Minimum	Maximum -	SD	Mea	n Minimun	n Maximu	ım SD
0	Artificial Soil/S	5	113.23	51.638	158.52	47.962				
100		5	122.76	46.4	202.31	58.126				
Graphics									· · · · · · · · · · · · · · · · · · ·	
17						F-08		1	,	
P 1						60				
1 1						1			/•	
٤, ١					3	Ontransformed 20		!	6	•
					Į.	£ 20		•/		
* 1					Š	F .		·		
Root W.								/:		
Ige Root Wf.										
werage Root W.						-20-		/. :		
Average Root Wr. (Wet, mg)						-40		/•		
Average Root W.						-20-	,	<i>[</i> •		
9						-40 -60	./	<i>[</i> •		
Average Root W.	Q		100			-40	-1.5	-1.0 -0.5 0.0	0.5 1.0	1.5 2.0

Approval:

Comparisons:

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Report Date:

18 Jul-06 2:17 PM

Analysis:

07-0264-8106/B154202psB

r ignit biogss	ay - Chronic									CH2M F
Endpoint			ysis Type		Sample Li		rol Link	Date Analyzed		sion
Average Root	t Wt. (Dry, mg)	Com	parison		16-8985-72	14 16-89	85-7214	18 Jul-06 2:17 I	PM CET	ISv1.1.2
Method		Alt I	H Data	Transform	Zeta	NOEL.	LOEL	Toxic Units	ChV	PMSD
Equal Variand	ce t Two-Sample	C > .	T Untra	nsformed		100	>100	1	N/A	62.43%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		0.33643	1.85955	0.3726	4.9107	6	Non-Significant E	ffect	
ANOVA Table	0									
Source	Sum of S	Squares	Mean Squ	are DF	F Statistic	: P-Valu	е	Decision(0.05)		
Between	1.973415		1.973415	1	0.11	0.7452	0	Non-Significant E	ffect	
Error	139.4799		17.43499	8				-		
Total	141.4533	35	19.408407	9	_					
ANOVA Assu	umptions									-
Attribute	Test			Statistic	Critical	P-Valu	10	Decision(0.01)		
Variances	Variance	Ratio F		1.00746	23,15450	0.9944	3	Equal Variances		
Distribution	Shapiro-	Wilk W		0.90269		0.2344	6	Normal Distributi	on	
Data Summa	ary			Origi	inal Data			Trans	formed Da	ta
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimun	n Maxim	um SD
0	Artificial Soil/S	5	7.8666	3.78	14.108	4.1678				
100		5	6.9781	2.3667	13.37	4.1833				
Graphics										
1.0	1					•3		i		
E 0.9	1					6-		i	•	9
6.0 G	1					8		1		
0.7	1							;		
0.6						is a		. !		
0.5	1					Untransformed		/	•	
0.9 0.8 0.6 0.5 0.6 0.5 0.6 0.5 0.6 0.5 0.6 0.5 0.6 0.5 0.6 0.5 0.6 0.6 0.5 0.6 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	-					⇒ 0]				
¥ 0.3						-2		/		
0.2	4					1		/-		
0.1	1					4	. /			
	1					-6	/	1		
0.0	0		10	0		-2.0	-1.5 -	1.0 -0.5 0.0	.5 1.0	1.5 2.0

Comparisons:

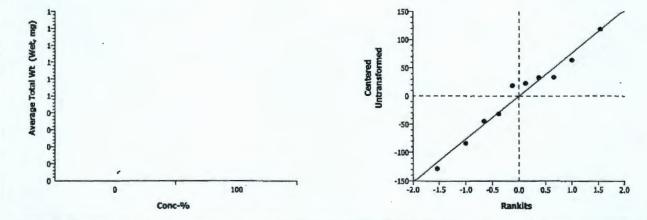
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Report Date:

18 Jul-06 2:17 PM

Analysis: 06-1145-5351/B154202psB

Vet, mg)  D-Sample  S  Conc-%			Transform nsformed	Sample Li 16-8985-72 Zeta	214 16-898 NOEL	5-7214 LOEL	Date Analyzed 18 Jul-06 2:17 P		.1.2 PMSD
o-Sample s Conc-%	Alt I	H Data			NOEL				
s Conc-%				Zeta		LOEL	Toxic Units	ChV	DMen
s Conc-%	C>	T Untrai	nsformed		100				LWOD
Conc-%					100	>100	1	N/A	51.32%
100		Statistic	Critical	P-Value	MSD		Decision(0.05)		
		-0.4456	1.85955	0.6661	90.9112		Non-Significant E	ffect	
Sum of S	quares	Mean Squ	are DF	F Statistic	c P-Value		Decision(0.05)		
1186.341		1186.341	1	0.20	0.66771		Non-Significant Et	ffect	
47802.41		5975.302	8			-			
48988.75	50	7161.6427	9	-					
ns									
Test			Statistic	Critical	P-Value		Decision(0.01)		
Variance	Ratio F		2.51228	23.15450	0.39406		Equal Variances		
Shapiro-V	Vilk W		0.96972		0.88820		Normal Distribution	חנ	
			Origin	nal Data			Transf	ormed Data	
rol Type	Count	Mean	Minimum	Maximum	SD	Mear	Minimum	Maximum	SD
ial Soil/S	5	177.14	93,113	240.86	58.331				
	5	198.92	70.053	317.36	92.456				
					150		1	/	/
	Sum of S 1186.341 47802.41 48988.75 ns Test Variance	Sum of Squares 1186.341 47802.41 48988.7550 ns Test Variance Ratio F Shapiro-Wilk W	Sum of Squares Mean Squ 1186.341 1186.341 47802.41 5975.302 48988.7550 7161.6427  ns  Test  Variance Ratio F Shapiro-Wilk W  rol Type Count Mean cial Soil/S 5 177.14	Sum of Squares         Mean Square         DF           1186.341         1186.341         1           47802.41         5975.302         8           48988.7550         7161.6427         9           ns         Test         Statistic           Variance Ratio F         2.51228           Shapiro-Wilk W         0.96972           Originate of Type Count Mean Minimum Minimum Dial Soil/S           tool Type Count Mean Minimum Minimum Dial Soil/S         177.14         93.113	Sum of Squares         Mean Square         DF         F Statistic           1186.341         1186.341         1         0.20           47802.41         5975.302         8           48988.7550         7161.6427         9           Ins         Test         Statistic         Critical           Variance Ratio F         2.51228         23.15450           Shapiro-Wilk W         0.96972           Prof Type         Count         Mean         Minimum         Maximum           cial Soil/S         5         177.14         93.113         240.86	Sum of Squares         Mean Square         DF         F Statistic         P-Value           1186.341         1186.341         1         0.20         0.66771           47802.41         5975.302         8           48988.7550         7161.6427         9           ns         Test         Statistic         Critical         P-Value           Variance Ratio F         2.51228         23.15450         0.39406           Shapiro-Wilk W         0.96972         0.88820           Original Data           troi Type         Count         Mean         Minimum         Maximum         SD           cial Soil/S         5         177.14         93.113         240.86         58.331	Sum of Squares         Mean Square         DF         F Statistic         P-Value           1186.341         1186.341         1         0.20         0.66771           47802.41         5975.302         8           48988.7550         7161.6427         9           ns           Test         Statistic         Critical         P-Value           Variance Ratio F         2.51228         23.15450         0.39406           Shapiro-Wilk W         0.96972         0.88820           Original Data           Froi Type         Count         Mean         Minimum         Maximum         SD         Mean           cial Soil/S         5         177.14         93.113         240.86         58.331           5         198.92         70.053         317.36         92.456	Sum of Squares   Mean Square   DF   F Statistic   P-Value   Decision(0.05)	Sum of Squares   Mean Square   DF   F Statistic   P-Value   Decision(0.05)



Approval:

Comparisons:

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Analysis:

06-7364-8671/B154202psB

Endpoint		Anal	ysis Type		Sample Lin	k Control	Link Date Analyzed	Versio	n
	al Wt (Dry, mg)		parison		16-8985-72				
Method		Alt I	H Data T	ransform	Zeta	NOEL L	OEL Toxic Units	ChV	PMSD
Equal Varian	ce t Two-Sample	C>.	T Untran	sformed		100 >	100 1	N/A	59.60%
Group Com	parisons								
Control	vs Conc-%		Statistic	Critical	P-Value	MSD	Decision(0.05)		
Artificial Soil			-0.2489	1.85955	0.5951	12.0486	Non-Significant	Effect	
ANOVA Tab	le								
Source	Sum of S	Saustos	Mean Squa	re DF	F Statistic	P-Value	Decision(0.05)		
Between	6.502588		6.502588	1	0.06	0.80970	Non-Significant	Effect	
Error	839.6294		104.9537	8	5.05	5,55576			
Total	846.1319		111.45626	9	-				
ANOVA Ass	umptions								
Attribute	Test			Statistic	Critical	P-Value	Decision(0.01)		
Variances	Variance	Ratio F		1.70337	23.15450	0.61853	Equal Variances		****
Distribution	Shapiro-			0.96503		0.84128	Normal Distribut		
Data Summ	ary			Origin	nal Data		Trans	sformed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean Minimu	m Maximun	n SD
0	Artificial Soil/S	5	20.217	12.223	33.384	8.8117			
100		5	21.830	6.47	38.17	11.500			
Graphics									
3 1						20			
Average Total Wt (Dry, mg)						15-	į	•/	
ě :						Untransformed			
*						5 3		/-	
S .					Į		/	•	
9 1-						's o	1		
. O						-5-			
₹ 0						-10-	•/•		
0.						3			
						-15-	,		
Average Total Wit (Dry, mg)						1 /	i		
0	0		100			-20	-1.5 -1.0 -0.5 0.0	0.5 1.0 1.5	2.0

Initials:	Day 0 D	Day 12 NT	Day 14	Day 16		Day 28 _ O~		
			Samp	le ID: E28310	1-8012	31542-03		
			. *	seeds germine	led delive		P	Н
		PRE-EMERGENCE	@ EMERGENCE	POST-	7-DAYS POST-	14-DAYS POST-	(AMPORT	FINAL
CONC.	REPLICATE	(12 days after	(14 days after	(16 days after	EMERGENCE (21 days after	(26 days after	(@ planting)	(28 days after
		planting)	planting)	planting		planting)	10	planting)
	A	1	3	414	4 4	4		
. annie		ч	5		1 1	5		
100%	В						7.2	77
	С	3	3	4 4	14 3	3	1-2	7.3
	D	2	2	3 4	114 4	4		
	E	3	4	4/4	4 5	5		
ays Post-Emer		thin down to 5 Seeds		st seedlings).	escribe shoot appeara	nce:		
Replicate A	3 medo	im + 1 Sm	rell part	اس عادر	shoe			
Replicate B	6 med	oum in a	ad shape	- 5	mallest re	moved		
Replicate C	1 lange	, + Z med	Jum in a	and shape	+ 1 55	yle short	dent	
Replicate D	3 med	um + 1 5,	11 -	and shin	e	9		
Replicate E	4 med		and shape	+ 1 sma	Il strike she	at aleast us	/ hours	1.4
Nephcaie is	1 1-100	3	200	1 ( 9,0	1 3/36 3.4	p. 4.1	Journey	3.3.6
Tave Port-Eme	mence: Describe	show annearance:						
	rgence: Describe			10 1 -0	len.	all-good st	. 00	00
Replicate A .	7 me co		,	0.	ape, Ism	all good or	apeagr	ecn
Raplicate B	7 media		en & good	,				
Replicate C	large.	2 mediun	n - all gree	n fingou	d shape			
Replicate D	4 media	in - all a	reen & iz	good sh	upe			
Replicate E	1 large.	3 medium - a	Il green & in	good sha	e small	-w/1 brow	on shoot	
sure Shoot Hel	,		1st Seedling	2nd Seedling	245-4-			# of shoot
	gric.		. 111 415		3rd Seedling	4th Seedling	Sth Seedling	42
ove ground)		Replicate A		- 67	m ma	mm	mm	
		Replicate B	55 mm	n	m mm	mm	mm	76
		Replicate C	74 mm		m mm	mm	mm	51
		Replicate D	55 mm	m	m mm	mm	mm	37
		Replicate E	69 mm		en en en	mm	mm	
						1		
asure Shoot We	ight:		Tin Tare WL (mg)	Wet Wt (mg)	Dry Wt. (mg)	1		
ove ground)		Replicate A	1003.62	1245.0	1049,42			
		Replicate B	1020.47	1473.4	1103.86			
		Replicate C	1018.48	1473.6	1110.39			
		Replicate D	1002.17	13024	1046.68	]		
		Replicate E	994.12	1173 IN	- 12/2	1		
		- resputate E	111.12	1	10640	J		
Describe root ap	opearance:			1377.3				
Replicate A								
Replicate B					4			
Replicate C								
Replicate D								
Replicate E								
asure Root Leng	alle		1st Seedling	2nd Seedling	3rd Seedling	4th Seedling	5th Seedling	
geet root)		Replicate A	103 mm		m mm		mm	
- Contraction								
		Replicate B	107		m mm		mm	
		Replicate C	137 mm		m mm	mm	mm	
		Replicate D	136 mm		m mm	mm	mm	
		Replicate E	112 mm		m mm	mm	mm	
				Wet Wt (mg)	Dry Wt. (mg)	Tin Tare	104.(mg)	
nsure Rool Wels	ght		Tin Tare Wt. (mg)			1017.14		
	ght	Renticate A	Tin Tare Wt. (mg)		1001.01			
	ght:	Replicate A	794.12	1556.2	THE RESERVE			
	ght	Replicate B	965.79	1556.2	1021.39			
asure Root Welg	ght		965.79 1015.00	1826.5 1826.5	1021.39			
	ght	Replicate B	<del>1994.12</del> 965.79 1015.00 191.78	1826.5 1826.5 1826.5	1021.39			
	pht	Replicate B Replicate C	965.79 1015.00	1826.5 1826.5	1021.39			

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Test Link:

10-7237-4516/B154203psB

								CH2M H
Test No:	12-8841-7685			Plant Chroni			Duration:	N/A
Start Date:	25 Jan-06		Protocol:	ASTM E196	3-02 (2002)		Species:	Poa sandbergii
Ending Date:			Dil Water:				Source:	
Setup Date:	25 Jan-06		Brine:					
Comments:	recalculated He	eight and	Length data J	uly 18, 2006				
Sample No:	15-5457-5144		Code:	B1542-03			Client:	
Sample Date:			Material:	Soil			Project:	
Receive Date:			Source:	Hanford				
Sample Age:	72d Oh	1404	Station:					
Comments:	J10DT8, E283	3101						
Comparison S			NOT				BMCD	Mathed
Analysis 12-3597-7958	% Germination		NOEL 100	> 100		hV /A	PMSD 22.60%	Method  Equal Variance t Two-Sample
12-3597-7956				> 100		/A	50.83%	Equal Variance t Two-Sample
	Average AG W			> 100		/A	63.25%	Equal Variance t Two-Sample
06-5621-9654				> 100		/A	55.58%	Equal Variance t Two-Sample
01-5964-0324				> 100		/A	61.46%	Equal Variance t Two-Sample
03-3064-0324				> 100		/A	51.72%	Equal Variance t Two-Sample
	Average Total		_	> 100		/A	61.50%	Equal Variance t Two-Sample
		TT (DI),	1197	- 100			01.00%	Equal variation (1170 dumple
% Germinatio	No. of the last of	Para	Mana	MI=1	***************************************	er.	en	CV
Conc-%	Control Type	Reps	Mean .	Minimum	Maximum	SE	SD 0.477000	20.33%
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	
100			0.84000	0.60000	1,00000	0.07483	0.16733	19.92%
Average AG V	Vt (Wet, mg) Si	ummary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
-	Artificial Soil/S	5	63.903	41.475	82.338	7.1313	15.946	24.95%
-	Artificial Soil/S	5 5	63.903 90.866	41.475 60.345	82.338 151.71	7.1313 15.946	15.946 35.657	24.95% 39.24%
100	Artificial Soil/S  Vt (Dry, mg) Su	5						39.24%
0 100 Average AG V Conc-%		5						39.24% CV
100 Average AG V	Vt (Dry, mg) Su	5 mmary	90.866	60.345	151.71	15.946	35.657	39.24%
100 Average AG V Conc-%	Vt (Dry, mg) Su Control Type	5 mmary Reps	90.866 Mean	60.345 Minlmum	151.71 Maximum	15.946 SE	35.657 SD	39.24% CV
100 Average AG V Conc-% 0	Vt (Dry, mg) Su Control Type	5 mmary Reps 5 5	90.866 Mean 12.351 16.718	60.345 Minlmum 7,9275	151.71 Maximum 19.276	15.946 SE 2.1347	35.657 SD 4.7733	39.24% CV 38.65%
Average AG V Conc-% 0 100 Average Root	Vt (Dry, mg) Sur Control Type Artificial Soil/S	5 mmary Reps 5 5 5	90.866 Mean 12.351 16.718	Minimum 7.9275 11.128	Maximum 19.276 30.637	15.946 SE 2.1347 3.6185	35.657 SD 4.7733	39.24% CV 38.65%
Average AG V Conc-% 0 100 Average Root	Vt (Dry, mg) Su Control Type Artificial Soil/S	5 mmary Reps 5 5	90.866  Mean 12.351 16.718  y Mean	Minimum 7.9275 11.128	Maximum 19.276 30.637	15.946 SE 2.1347 3.6185 SE	35.657 SD 4.7733 8.0912	39.24% CV 38.65% 48.40%
Average AG V Conc-% 0 100 Average Root Conc-% 0	Vt (Dry, mg) Sur Control Type Artificial Soil/S t Wt. (Wet, mg) Control Type	mmary Reps 5 5 Summar	90.866 Mean 12.351 16.718	Minimum 7.9275 11.128	Maximum 19.276 30.637	15.946 SE 2.1347 3.6185	35.657 SD 4.7733 8.0912	39.24%  CV  38.65%  48.40%
Average AG V Conc-% 0 100 Average Root Conc-% 0 100	Vt (Dry, mg) Sur Control Type Artificial Soil/S t Wt. (Wet, mg) Control Type	Reps 5 Summar Reps 5 5 5 5 5 5 5 5 5 5	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14	Minimum 7.9275 11.128 Minimum 51.638	Maximum 19.276 30.637 Maximum 158.52	15.946 SE 2.1347 3.6185 SE 21.449	35.657 SD 4.7733 8.0912 SD 47.962	39.24%  CV  38.65%  48.40%  CV  42.36%
Average AG V Conc-% 0 100 Average Root Conc-% 0 100 Average Root	Vt (Dry, mg) Sur Control Type Artificial Soil/S t Wt. (Wet, mg) Control Type Artificial Soil/S	5 mmary Reps 5 5 Summar Reps 5 5 5 Summary Reps 5 5 5 Summary	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14	Minimum 7.9275 11.128 Minimum 51.638	Maximum 19.276 30.637 Maximum 158.52 270.5	15.946  SE 2.1347 3.6185  SE 21.449 26.184	35.657 SD 4.7733 8.0912 SD 47.962	39.24%  CV  38.65%  48.40%  CV  42.36%
Average AG V Conc-% 0 100 Average Root Conc-% 0 100	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  t Wt. (Dry, mg) S Control Type	mmary Reps 5 5 Summar Reps 5 5 Summary Reps	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean	Minimum 7,9275 11,128  Minimum 51,638 121,90  Minimum	Maximum 19.276 30.637 Maximum 158.52 270.5	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE	35.657  SD 4.7733 8.0912  SD 47.962 58.548  SD	39.24%  CV 38.65% 48.40%  CV 42.36% 34.01%
Average AG V Conc-% 0 100 Average Root Conc-% 0 100 Average Root Conc-% 0 Conc-%	Vt (Dry, mg) Sur Control Type Artificial Soil/S t Wt. (Wet, mg) Control Type Artificial Soil/S	mmary Reps 5 5 Summar Reps 5 5 Summary Reps	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14	Minimum 7,9275 11.128 Minimum 51.638 121.90	Maximum 19.276 30.637 Maximum 158.52 270.5	15.946  SE 2.1347 3.6185  SE 21.449 26.184	35.657 SD 4.7733 8.0912 SD 47.962 58.548	39.24%  CV  38.65%  48.40%  CV  42.36%  34.01%  CV
Average AG V Conc-% 0 100 Average Root Conc-% 0 100 Average Root Conc-% 0 100 Average Root	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  t Wt. (Dry, mg) S Control Type	mmary Reps 5 5 Summar Reps 5 5 Summary Reps 5 5 Summary Reps 5 5	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003	Minimum 7,9275 11,128 Minimum 51,638 121,90 Minimum 3,78	Maximum 19.276 30.637 Maximum 158.52 270.5 Maximum 14.108	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639	35.657 SD 4.7733 8.0912 SD 47.962 58.548 SD 4.1678	39.24%  CV 38.65% 48.40%  CV 42.36% 34.01%  CV 52.98%
Average AG V Conc-% 0 100 Average Root 0 100 Average Root 0 100 Average Root Conc-% 0 100 Average Total	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  Wt. (Dry, mg) S Control Type Artificial Soil/S	mmary Reps 5 5 Summar Reps 5 5 Summary Reps 5 5 Summary Reps 5 5	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003	Minimum 7,9275 11,128  Minimum 51,638 121,90  Minimum 3,78 6,05	Maximum 19.276 30.637 Maximum 158.52 270.5 Maximum 14.108	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639	35.657 SD 4.7733 8.0912 SD 47.962 58.548 SD 4.1678	39.24%  CV 38.65% 48.40%  CV 42.36% 34.01%  CV 52.98%
Average AG V Conc-% 0 100 Average Root Conc-% 0 100 Average Root Conc-% 0 100 Average Total Conc-%	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  Wt. (Dry, mg) Control Type Artificial Soil/S	mmary Reps 5 5 Summar Reps 5 5 Summary Reps 5 Summary Reps 5 Summary Reps	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003	Minimum 7,9275 11,128 Minimum 51,638 121,90 Minimum 3,78	Maximum 19.276 30.637  Maximum 158.52 270.5  Maximum 14.108 16.423	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639 1.8129	35.657 SD 4.7733 8.0912 SD 47.962 58.548 SD 4.1678 4.0538	39.24%  CV 38.65% 48.40%  CV 42.36% 34.01%  CV 52.98% 40.52%
Average AG V Conc-% 0 100 Average Root Conc-% 0 100 Average Root Conc-% 0 100 Average Total Conc-% 0	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  Wt. (Dry, mg) S Control Type Artificial Soil/S  Wt. (Dry, mg) S Control Type Artificial Soil/S	mmary Reps 5 5 Summar Reps 5 5 Summary Reps 5 Summary Reps 5 Summary Reps	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003  y  Mean	Minimum 7,9275 11.128 Minimum 51.638 121.90 Minimum 3.78 6.05	Maximum 19.276 30.637  Maximum 158.52 270.5  Maximum 14.108 16.423	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639 1.8129  SE	35.657  SD 4.7733 8.0912  SD 47.962 58.548  SD 4.1678 4.0538	39.24%  CV  38.65%  48.40%  CV  42.36%  34.01%  CV  52.98%  40.52%  CV
Average AG V Conc-% 0 100 Average Root 0 100 Average Root Conc-% 0 100 Average Total Conc-% 0 100	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  Wt. (Dry, mg) S Control Type Artificial Soil/S  Wt. (Dry, mg) S Control Type Artificial Soil/S	mmary Reps 5 5 Summary Reps 5 5 Summary Reps 5 Summary Reps 5 5 Summary Reps 5 5 5	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003  y  Mean 177.14 263.01	Minimum 7,9275 11.128  Minimum 51.638 121.90  Minimum 3.78 6.05	Maximum 19.276 30.637  Maximum 158.52 270.5  Maximum 14.108 16.423  Maximum 240.86	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639 1.8129  SE 26.086	35.657  SD 4.7733 8.0912  SD 47.962 58.548  SD 4.1678 4.0538  SD 58.331	39.24%  CV 38.65% 48.40%  CV 42.36% 34.01%  CV 52.98% 40.52%  CV 32.93%
Average AG V Conc-% 0 100 Average Root 0 100 Average Root 0 100 Average Total Conc-% 0 100 Average Total Conc-% 0 100 Average Total	Vt (Dry, mg) Sur Control Type Artificial Soil/S Wt. (Wet, mg) Control Type Artificial Soil/S Wt. (Dry, mg) S Control Type Artificial Soil/S I Wt (Wet, mg) Control Type Artificial Soil/S	mmary Reps 5 5 Summary	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003  y  Mean 177.14 263.01	Minimum 7,9275 11.128  Minimum 51.638 121.90  Minimum 3.78 6.05  Minimum 93.113 195.11	Maximum 19.276 30.637  Maximum 158.52 270.5  Maximum 14.108 16.423  Maximum 240.86 422.21	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639 1.8129  SE 26.086 41.799	35.657  SD 4.7733 8.0912  SD 47.962 58.548  SD 4.1678 4.0538  SD 58.331 93.465	39.24%  CV  38.65%  48.40%  CV  42.36%  34.01%  CV  52.98%  40.52%  CV  32.93%  35.54%
Average AG V Conc-% 0 100 Average Root 0 100 Average Root Conc-% 0 100 Average Total Conc-% 0 100	Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S  Wt. (Dry, mg) S Control Type Artificial Soil/S  Wt. (Wet, mg) Control Type Artificial Soil/S	mmary Reps 5 5 Summary Reps 5 5 Summary Reps 5 5 Summary Reps 5 Summary Reps 6 Summary Reps	90.866  Mean 12.351 16.718  y  Mean 113.23 172.14  Mean 7.8666 10.003  y  Mean 177.14 263.01	Minimum 7,9275 11.128  Minimum 51.638 121.90  Minimum 3.78 6.05	Maximum 19.276 30.637  Maximum 158.52 270.5  Maximum 14.108 16.423  Maximum 240.86	15.946  SE 2.1347 3.6185  SE 21.449 26.184  SE 1.8639 1.8129  SE 26.086	35.657  SD 4.7733 8.0912  SD 47.962 58.548  SD 4.1678 4.0538  SD 58.331	39.24%  CV 38.65% 48.40%  CV 42.36% 34.01%  CV 52.98% 40.52%  CV 32.93%

**CETIS Test Summary** 

Report Date:

18 Jul-06 2:22 PM

Test Link:

10-7237-4516/B154203psB

% Germina	tion Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
100		0.80000	1.00000	0.60000	0.80000	1.00000
Average A	Wt (Wet, mg) De	etail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	67.2900	55.1900	82.338	73.2233	41.4750
100		60.3450	90.5860	151,707	75.0575	76,6360
Average A	3 Wt (Dry, mg) Det	tail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751
100		11.4500	16.6780	30.6367	11.1275	13.696
Average Ro	oot Wt. (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
100		134.765	172.182	270.5	121.905	161.350
Average R	oot Wt. (Dry, mg) I	Detail				
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4.295
100		7.42999	11.1200	16.4233	6.04999	8.99399
Average To	otal Wt (Wet, mg)	Detail		-		
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	210.652	195.814	240.862	145.247	93.1125
100		195.11	262.768	422.207	196.963	237.986
Average To	otal Wt (Dry, mg) I	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	23.9280	18.946	33.384	12,6066	12.2225
100		18.8800	27.7980	47.0600	17.1775	22.69

**CETIS Test Summary** 

Comparisons:

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Analysis: 12-3597-7958/B154203psB

Endpoint			ysis Type		Sample Lir			te Analyzed	Version				
% Germination		Com	parison		10-7237-45	16 10-723	7-4516 18	Jul-06 2:22 PM	1 CETISV1	.1.2			
Method		Alt I		ransform					ChV	PMSD			
Equal Variance t	Two-Sample	C > 1	Angula	r (Corrected)		100	>100 1		N/A	22.60%			
Group Compari	sons												
Control v	s Conc-%		Statistic	Critical	P-Value	MSD	Deci	sion(0.05)					
Artificial Soil/Sec	di 100		0.37677	1.85955	0.3581	0.23506	Non-	Significant Effe	ect				
ANOVA Table													
Source	Sum of S	Squares	Mean Squa	re DF	F Statistic	P-Value	Deci	sion(0.05)					
Between	0.005670		0.005671	1	0.14	0.71614		Significant Effe	ect				
Ептог	0.319584		0.039948	8									
Total	0.325255	54	0.0456189	9	_								
ANOVA Assum	ptions												
Attribute	Test			Statistic	Critical	P-Value	Deci	sion(0.01)					
Variances	Variances Variance Ratio F				23,15450	0.90131	Decision(0.01) Equal Variances						
Distribution Shapiro-Wilk W 0.85889						0.07404	Nom	nal Distribution					
Data Summary				Origi	nal Data			Transfo	ion  sformed Data  m Maximum SD  1.34528 0.206				
Conc-% C	ontrol Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD			
0 A	rtificial Soil/S	5	0.88000	0.60000	1.00000	0.17889	1.20581	0.88608	1.34528	0.2063			
100		5	0.84000	0.60000	1.00000	0.16733	1.15819	0.88608	1.34528	0.1931			
0.9-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1				Reject Null		Court Angle Corr. Angle -0.2	/.	·/	•				
ــــــــــــــــــــــــــــــــــــــ	0		100			-0.4 1 -2.0	-1.5 -1.0	-0.5 0.0 0.5	1.0 1.5	2.0			

Approval:\_

Comparisons:

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-1.0

0.0

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0.5

Analysis: 12-1749-2677/B154203psB

Version CETISv1.1.2  nV PMSD A 50.83%
CETISv1.1.2  nV PMSD A 50.83%
PMSD 50.83%
A 50.83%
ed Data
Maximum SD

1.0 1.5 2.0

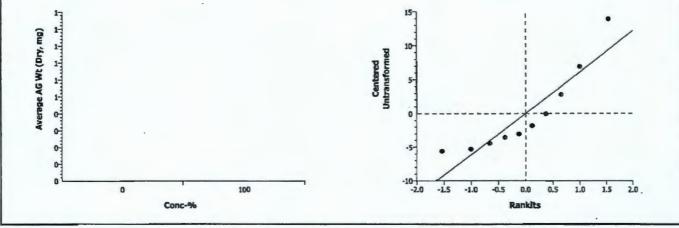
Report Date: **CETIS Analysis Detail** 

Comparisons:

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Analysis: 08-2416-9275/B154203psB

Plant Bioass	ay - Chro	nic									CH2M H
Endpoint			Ana	lysis Type		Sample Li	nk Contro	l Link	Date Analyzed	Versio	n
Average AG	Nt (Dry, π	ng)	Com	parison		10-7237-45	16 10-723	7-4516	18 Jul-06 2:22 P	M CETIS	v1.1.2
Method			Alt	H Data	Fransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Varian	ce t Two-S	Sample	C>	T Untrar	nsformed		100	>100	1 .	N/A	63.25%
Group Comp	arisons										
Control	vs C	onc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/	Sedi 10	00		-1.0394	1.85955	0.8355	7.8124		Non-Significant Ef	ffect	
ANOVA Tab	e										
Source	5	Sum of S	squares	Mean Squ	are DF	F Statistic	P-Value		Decision(0.05)		
Between	4	7.67259		47.67259	1	1.08	0.32901		Non-Significant Ef	ffect	
Error	3	353.0072		44.1259	8						
Total	4	100.6797	94	91.798492	9	_					
ANOVA Ass	umptions			4							
Attribute	7	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	1	/ariance	Ratio F		2.87331	23.15450	0.33110		Equal Variances		
Distribution	5	Shapiro-V	Wilk W		0.84132		0.04576		Normal Distributio	תנ	
Data Summa	ary				Origin	nal Data			Transf	ormed Data	
Conc-%	Contro	Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximun	n SD
0	Artificia	I Soil/S	5	12.351	7.9275	19.276	4,7733				
100			5	16.718	11.128	30.637	8.0912				
Graphics											
17]							157		1		
(gm ,yr)							1		1		/
* 1							28 10-		1	/	



Comparisons:

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Report Date:

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Anaheles

06-5621-9654/B154203psB

nalysis Del	lall						Analysis:	06-5621-9654	/B154203ps
ay - Chronic									CH2M Hill
	Апа	lysis Type				l Link D	ate Analyzed	Version	
Wt. (Wet, mg)	Com	nparison		10-7237-45	16 10-723	7-4516 1	8 Jul-06 2:22 PN	CETISV1	.1.2
	Alt	H Data	Transform	Zeta	NOEL I	LOEL	Toxic Units	ChV	PMSD
e t Two-Sample	C>	T Untra	nsformed		100	>100 1	1	N/A	55.58%
arisons									
vs Conc-%		Statistic	Critical	P-Value	MSD	De	cision(0.05)		
Sedi 100		-1.7403	1.85955	0.9400	62.9411	No	n-Significant Effe	ect	
9									
Sum of S	Squares	Mean Squ	are DF	F Statistic	P-Value	De	cision(0.05)		
8674.86		8674.86	1	3.03	0.11998	No	n-Significant Effe	ect	
22913.1		2864.138	8						
31587.96	619	11538.998	9						
mptions									
Test			Statistic	Critical	P-Value	De	cision(0.01)		
Variance	Ratio F		1.49014	23.15450	0.70857	Eq	ual Variances		
Shapiro-	Wilk W		0.94145		0.56924	No	rmal Distribution		
ry			Origi	inal Data			Transfo	rmed Data	
<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
Artificial Soil/S	5	113.23	51.638	158.52	47.962				
	5	172.14	121.91	270.5	58.548				
				- Andrews	3		,	/	
	wt. (Wet, mg)  e t Two-Sample  arisons  vs 'Conc-%  Sedi 100  Sum of 3  8674.86  22913.1  31587.96  mptions  Test  Variance Shapiro-  ry  Control Type	Ana Wt. (Wet, mg) Con Alt et Two-Sample C > arisons vs Conc-% Sedi 100 Sum of Squares 8674.86 22913.1 31587.9619 mptions Test Variance Ratio F Shapiro-Wilk W ry Control Type Count Artificial Soil/S 5	Analysis Type  Wt. (Wet, mg) Comparison  Alt H Data e t Two-Sample C > T Untrar  arisons vs Conc-% Statistic dedi 100 -1.7403  Sum of Squares Mean Squ 8674.86 8674.86 22913.1 2864.138 31587.9619 11538.998  mptions Test Variance Ratio F Shapiro-Wilk W  Ty  Control Type Count Mean Artificial Soil/S 5 113.23	Analysis Type   Wt. (Wet, mg)   Comparison	Analysis Type	Analysis Type	Analysis Type   Sample Link   Control Link   December   Comparison   10-7237-4516   10-7237-4516   11-7237-45	No.   No.	Analysis Type

-0.5 0.0 0.5 1.0 1.5 2.0

Rankits

Comparisons:

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Analysis:

01-5964-0324/B154203psB

Plant Bioassa	ay - Chronic						1			CH2M H
Endpoint			lysis Type		Sample Li		rol Link	Date Analyzed	Version	
Average Root	Wt. (Dry, mg)	Com	parison		10-7237-45	516 10-72	237-4516	18 Jul-06 2:22 Pl	M CETISV	1.1.2
Method		Alt		Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	e t Two-Sample	C >	T Untrai	sformed		100	>100	1	N/A	61.46%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		-0.8218	1.85955	0.7825	4.8350		Ion-Significant Eff	fect	
ANOVA Table	)									
Source	Sum of	Squares	Mean Squ	are DF	F Statistic	c P-Valu	e I	Decision(0.05)		
Between	11.4155		11.41551	1	0.68	0.4349		Ion-Significant Ef	fect	
Error	135.214	2	16.90177	8						
Total	146.629	681	28.31728	9						
ANOVA Assu	mptions									
Attribute	Test			Statistic	Critical	P-Valu	e I	Decision(0.01)		
Variances	Variance	Ratio F		1.05701	23.15450	0.9584		qual Variances		
Distribution	Shapiro-			0.87437		0.1123		Normal Distribution	n	
Data Summa	ry			Origin	nal Data			. Transfo	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soll/S	5	7.8666	3.78	14.108	4.1678				
100		5	10.003	6.05	16.423	4.0538				
Graphics										
17						87		:		,
Average Root Wt. (Dry, mg)						6-		i	. %	
DIY,						8		į		
. L						2 E 4		3		
W 1						Untransformed		1		
9 1-						1		9/0	•	
6.0						- 0		/		-
¥ 0						-2-		/		
0						3	,			
- 1						4	. 1	-		

Approval:

1.0 1.5 2.0

Rankits

100

Comparisons:

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Report Date:

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Analysis: 03-3064-1258/B154203psB

	ull					Analysis:					
ay - Chronic								CH2M			
	Ana	lysis Type	,	Sample Li	nk Contro	Link Date Analyzed	Version	n			
Wt (Wet, mg)	Com	parison		10-7237-4	516 10-723	7-4516 18 Jul-06 2:22	ChV PMSD N/A 51.72%  Effect  Effect  ssution				
				Zeta				PMSD			
ce t Two-Sample	C>	T Untrar	sformed		100	100 1	N/A	51.72%			
parisons											
vs Conc-%		Statistic	Critical	P-Value	MSD	Decision(0.05)					
Sedi 100		-1.7428	1.85955	0.9402	91.6218	Non-Significant	Effect				
6											
Sum of S	Squares	Mean Squa	are DF	F Statisti	c P-Value	Decision(0.05)					
18433.81		18433.81	1	3.04	0.11954		Effect				
48552.59	9	6069.074	8								
66986.40	004	24502.881	9								
Variance			2.56740 0.92031	23.15450		Equal Variances Normal Distribut	ion				
<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mean Minimu	n Maximum	SD			
Artificial Soil/S	5	177.14	93.113	240.86	58.331						
	5	263.01	195.11	422.21	93.465						
-		,			Untransformed			/			
	l Wt (Wet, mg)  ce t Two-Sample  carisons  vs Conc-%  Sedi 100  8  Sum of 3  18433.81  48552.59  66986.40  umptions  Test  Variance Shapiro-  ary  Control Type	Ana  I Wt (Wet, mg) Com  Alt  De t Two-Sample C>  Dearisons  VS Conc-%  Sedi 100  Be  Sum of Squares  18433.81  48552.59  66986.4004  Amptions  Test  Varlance Ratio F  Shapiro-Wilk W  Dearity  Control Type Count  Artificial Soil/S 5	Analysis Type  Comparison  Alt H Data Toe t Two-Sample C > T Untransparisons  vs Conc-% Statistic  Sedi 100 -1.7428   Sedi 100 -1.7428  Se	Analysis Type	Analysis Type	Maint   Maint   Maint   Maximum   Maximum	Mailysis Type	Note   Note			

Approval:

Rankits

Comparisons:

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Report Date: 18 Jul-06 2:22 PM

Analysis: 08-5109-6105/B154203psB

lalyolo Do	Lan						Analysis:	08-5109-610	0/B1542U3P
ay - Chronic									CH2M Hi
	Ana	lysis Type		Sample Lin	nk Contro	l Link	Date Analyzed	Version	
Wt (Dry, mg)	Con	nparison		10-7237-45	16 10-723	7-4516	18 Jul-06 2:22 PM	M CETISV	1.1.2
	Alt	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
e t Two-Sample	C>	T Untra	nsformed		100	>100	1	N/A	61,50%
arisons									
vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Sedi 100		-0.9726	1.85955	0.8204	12.4342		Non-Significant Eff	ect	
)								1-10-1	
Sum of S	Squares	Mean Squ	are DF	F Statistic	P-Value		Decision(0.05)		
105.7444	1	105.7444	1	0.95	0.35922		Non-Significant Eff	ect	
894.2308	3	111.7788	8						
999.9751	182	217.52325	9						
mptions									
Test			Statistic	Critical	P-Value		Decision(0.01)		
Variance	Ratio F		1.87917	23.15450	0.55620		Equal Variances		
Shapiro-	Wilk W		0.86171		0.07992		Normal Distribution		
ry			Origi	inal Data			Transfo	rmed Data	
Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
Artificial Soil/S	5	20.217	12.223	33.384	8.8117	,			
	5	26.721	17.177	47.060	12.079				
~					25				
					20			•	,
				_	8			7/	
					E 15		į	. /	
					10-				
				Č	3 5		i		
					<b>⇒</b> 5-		/	•	
							/•		
			•		3		/:-		
	wt (Dry, mg)  e t Two-Sample arisons vs Conc-% dedi 100  Sum of 105.7444 894.2306 999.975  mptions Test Variance Shapiro- ry Control Type	Ana Wt (Dry, mg) Con Alt e t Two-Sample C > arisons vs Conc-% dedi 100  Sum of Squares 105.7444 894.2308 999.975182  mptions Test Variance Ratio F Shapiro-Wilk W  Ty Control Type Count Artificial Soil/S 5	Analysis Type   Wt (Dry, mg)   Comparison	Analysis Type   Wt (Dry, mg)   Comparison	Analysis Type	Analysis Type	Analysis Type   Sample Link   Control Link   Wit (Dry, mg)   Comparison   10-7237-4516   10-72	Note	Analysis Type

Rankits

#### **BLUEGRASS GROWTH TEST**

Test Start Date: 01/25/2006

Client Hanford Project

				seeds germinated		31542-8		н
CDNC.	REPLICATE	PRE-EMERGENCE (12 days after planting)		POST- EMERGENCE (16 days about	7-DAYS POST- EMERGENCE 21 days after 23 planting) 30	14-DAYS PDST- EMERGENCE (28 days after planting)	INITIAL (@ planting)	FINAL (26 days after planting)
	A	2-	2		5 3.	3		
100%	8	0	2	3 4	4 4	3 .	, _	
	С	0	1	2 2	2 2	2	6.5	7.1
	D	3	6	7 7	7 5	5		
	E	0	ı	2 6	7775	5		
ys Post-Emer Replicate A Replicate B Replicate C Replicate D Replicate E Days Post-Emer Replicate A Replicate B Replicate C	3 met: 1 medon 2 med: 4 medon 1 lurge	on + 1 such;  ium plants  ium plants  ium plant  e shoot appearance:  ium plant  ium plant  ium plant	my some shape of shap	april color Tismell w stype,	+ + Z + 1 small/ spet color / 1 green a	medium and	1 small	(single shoot w/ brown edge other small plant plant shope ren
Replicate D	3-4 med	1/arge	point /	50K 9000		AA		
Replicate E	1 large	plant 4	redum Da	nto look	900d, S	nall ple	+	
easure Shoot He	eight:	,	1st Seedling	2nd Seedling	3rd Seedling	4th Seedling	5th Seedling	# Shoots
bove ground)		Replicate A	40 mm	49 mm	44 mm		mm	(4,11,11
		Replicate B	40 mm	40 mm	51 mm	mm	т	4,12,4
		Replicate C	60 mm	40 mm	mm	mm		9,9
		Replicate D	20 mm	41 mm	50 mm	62 mm	39 mm	2,13,13,1
		Replicate E	42 mm	115	50 mm	62 mm	101-	1 1/1/
asure Shoot W	elahi:		Tin Tare Wt. (mg)	Wet Wt (mg)	Dry WL (mg)			1.7.1.4
ove ground)	edit.	Repficate A	993.35	1(80.7	1027.52			
ora growna)		Replicate B	1015.99	1156.0	1043,63			
		Replicate C	90541	1112.9	1015.93			
		Replicate D	99670	1287.8	1051 , 81			
		Replicate E	999 42	1332.6	1056,72			
Pescribe root a Replicate A Replicate B Replicate C Replicate D Replicate E	ppearance:				-			
easure Root Len	igth:		1st Seedling	2nd Seedling	3rd Seedling	4th Seedling	5th Seedling	
ongest root)		Replicate A	137 mm		126 mm	mm	INIT	1
		Replicate B	144 mm		107 mm	mini	mn	
		Replicate C	157 mm			mm	mn	2
		Replicate D	138 m		158 mm	102 mm	27 mm	1
		Replicate E	122 mm	127 mm	125 mm	78 mm	96 mm	
			T. T. 100 1	1 100	D- 100 / 1			
easure Root We	ight:		Tin Tare WL (mg)	Wet Wt (mg)	Dry Wt (mg)			
ongest root)		Replicate A	975.91	,	1010.81			
		Replicate B	11-1-1	1233.4				
		Replicate C	998.33	, cic.	101218			
			001 =-	IMAL	1	1		
		Replicate D	1006.36	1941.2	1040,11			

Report Date:

18 Jul-06 2:29 PM

Test Link:

20-0117-8477/B154204psB

Plant Bioassa	y - Chronic					CH2M HII
Test No:	07-0052-4534	est Type:	Plant Chronic		Duration:	N/A
Start Date:	25 Jan-06 F	rotocol:	ASTM E1963-02 (20	002)	Species:	Poa sandbergii
Ending Date:	ı	il Water:			Source:	
Setup Date:	25 Jan-06	rine:				
Comments:	recalculated Height and Le	ngth data J	ul <b>y</b> 18, 2006			
Sample No:	09-5315-2344	ode:	B1542-04		Client:	•
Sample Date:	15 Nov-05	laterial:	Soll		Project:	
Receive Date:		ource:	Hanford			
Sample Age:	71d 0h	tation:				
Comments:	J10DV2, E284601					
Comparison S	Summary					
Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-1690-0445	% Germination	100	> 100	N/A	29.92%	Equal Variance t Two-Sample
08-2900-5287	Average Height (mm)	100	> 100	N/A	19.39%	Equal Variance t Two-Sample
13-6243-3925	Average Length (mm)	100	> 100	N/A	21.46%	Equal Variance t Two-Sample
08-7538-5589	Average AG Wt (Wet, mg)	100	> 100	N/A	22.90%	Equal Variance t Two-Sample
08-4706-2181	Average AG Wt (Dry, mg)	100	> 100	N/A	32.76%	Equal Variance t Two-Sample
13-2902-4328	Average Root Wt. (Wet, m	g 100	> 100	N/A	36.51%	Equal Variance t Two-Sample
07-1398-9419	Average Root Wt. (Dry, mg	) 100	> 100	N/A	44.15%	Equal Variance t Two-Sample
17-2700-9201	Average Total Wt (Wet, m	g 100	> 100	N/A	28.88%	Equal Variance t Two-Sample
07-7227-4367	Average Total Wt (Dry, mg	100	> 100	N/A	36.53%	Equal Variance t Two-Sample

Analyst:\_

Report Date: Test Link: 18 Jul-06 2:29 PM 20-0117-8477/B154204psB

% Germinal	tion Summary							
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.72000	0.40000	1.00000	0.12000	0.26833	37.27%
Average He	eight (mm) Summ	ary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	45.68	36.700	55.8	3.3695	7.5344	16.49%
100		5	48.560	42.400	61	3.3658	7.5262	15.50%
Average Le	ength (mm) Summ	nary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0		5	124.62	89.800	153.2	12.597	28.167	22.60%
100		5	122.46	109.6	146.5	6.9375	15.513	12.67%
Average AG	Wt (Wet, mg) Si	ummary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	63.903	41.475	82.338	7.1313	15.946	24.95%
100		5	58.544	46.670	66.636	3.3307	7.4477	12.72%
Average AG	Wt (Dry, mg) Su	mmary						
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	12.351	7.9275	19.276	2.1347	4.7733	38.65%
100		5	10.669	9.2133	11.46	0.4217	0.9429	8.84%
Average Ro	oot Wt. (Wet, mg)	Summa	ry					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	113.23	51.638	158.52	21,449	47.962	42.36%
100		5	100.99	80.410	115.9	5.8455	13.071	12.94%
Average Ro	oot Wt. (Dry, mg)	Summar	у					
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	7.8666	3.78	14.108	1.8639	4.1678	52.98%
100		5	6.5947	6.2133	6.925	0.1202	0.2689	4.08%
Average To	tal Wt (Wet, mg)	Summa	ry					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	177.14	93.113	240.86	26.086	58.331	32.93%
100		5	159.54	127.08	178.35	8.7345	19.531	12.24%
Average To	tal Wt (Dry, mg) S	ummary	,					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0		5	20.217	12.223	33.384	3.9407	8.8117	43.58%
100		5	17.264	15.427	18.21	0.4928	1.1019	6.38%

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Test Link:	20-0117-8477/B154204psB

% Germinal	tion Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
100		0.60000	0.60000	0.40000	1.00000	1.00000
Average He	eight (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	50.6	41.8	55.8	36.7000	43.5
100		45.7000	43.7000	50	42.4000	61
Average Le	ength (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	138.800	142	153.2	99.3000	89.8000
100		129.300	115.7	146.5	111.2	109.6
Average AG	Wt (Wet, mg) Do	etail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	67.2900	55.1900	82.338	73.2233	41.4750
100		62.45	46.6700	58.7450	58,2200	66.6360
Average AG	Wt (Dry, mg) De	tail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soll/S	15.1720	10.552	19.276	8.82666	7.92751
100		11.3900	9.21334	10.2600	11.0220	11.46
Average Ro	oot Wt. (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
100		115.897	80.4100	106.985	99.926	101.748
Average Ro	oot Wt. (Dry, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4,295
100		6.59334	6.21334	6.92499	6.49200	6.75
Average To	otal Wt (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	210.652	195.814	240.862	145.247	93.1125
100		178.347	127.080	165.730	158.146	168.384
Average To	tal Wt (Dry, mg) [	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	23.9280	18.946	33.384	12.6066	12.2225
		17.9834	15.4267	17.185	17.5140	18.21

Plant Bioassay - Chronic

Comparisons:

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Endpoint	Analysis	Analysis Type		ink (	Control Link	Date Analyzed		Versi	on
% Germination	Compar	son	20-0117-8	3477	20-0117-8477	18 Jul-06 2:25	PM	CETIS	Sv1.1.2
Method	Alt H	Data Transform	Zeta	NOE	L LOEL	Toxic Units	Ch	V	PMSD

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		100	>100	1	N/A	29.92%

#### **Group Comparisons**

Control	VS	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)	
Artificial Soi	I/Sedi	100	1.08340	1.85955	0.1551	0.30265	Non-Significant Effect	

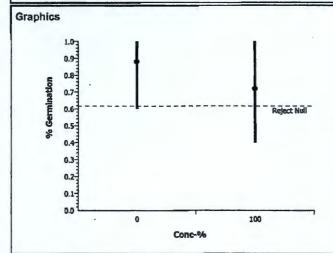
#### **ANOVA Table**

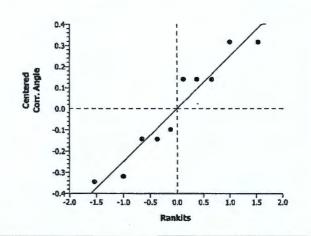
Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)	
0.0777281	0.077728	1	1.17	0.31020	Non-Significant Effect	
0.529773	0.066222	8				
0.60750108	0.1439497	9	_			
	0.0777281 0.529773	0.0777281 0.077728 0.529773 0.066222	0.0777281         0.077728         1           0.529773         0.066222         8	0.0777281     0.077728     1     1.17       0.529773     0.066222     8	0.0777281     0.077728     1     1.17     0.31020       0.529773     0.066222     8	0.0777281         0.077728         1         1.17         0.31020         Non-Significant Effect           0.529773         0.066222         8

#### ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	
Variances	Variance Ratio F	2.11043	23.15450	0.48725	Equal Variances	
Distribution	Shapiro-Wilk W	0.90642		0.25730	Normal Distribution	

Data Sumn				Origin	nal Data		Transformed Data				
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD	
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.17889	1.20581	0.88608	1.34528	0.20635	
100		5	0.72000	0.40000	1.00000	0.26833	1.02949	0.68472	1.34528	0.29977	





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Analysis:

08-2900-5287/B154204psB

Plant Bioass	ay - Olifonic	•					-			CH2M H
Endpoint	W		ysis Type		Sample Li		ol Link	Date Analyzed	Versio	
Average Heig	ght (mm)	Com	parison		20-0117-8	477 20-011	7-8477	18 Jul-06 2:25 P	M CETIS	v1.1.2
Method		Alt I		Transform	Zeta		LOEL	Toxic Units	ChV	PMSD
Equal Variance	ce t Two-Sample	C>.	T Untrai	nsformed		100	>100	1	N/A	19.39%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		-0.6047	1.85955	0.7189	8.85621		Non-Significant Et	fect	
ANOVA Table	e									
Source		Squares	Mean Squ	are DF	F Statisti	c P-Value		Decision(0.05)		
Between	20.73602	2	20.73602	1	0.37	0.56212		Non-Significant E	ffect	
Ептог	453.6399	9	56.70499	8						
Total	474.3759	938	77.441006	9	_					
ANOVA Assu	umptions							1111		
Attribute	Test			Statistic	Critical	P-Value	,	Decision(0.01)		
Variances	Variance	Ratio F		1.00219	23,15450	0.99836		Equal Variances		
Distribution	Shapiro-	Wilk W		0.91931		0.35123	1	Normal Distribution	n	
Data Summa	ary			Origi	nal Data			Transf	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximun	n SD
0	Artificial Soil/S	5	45.68	36.7	55.8	7.5344				
100		5	48.560	42.4	61	7.5262				
Graphics						-				
17						15-		1	•	1.
Average Height (mm)						N E 10			•/	
e Helg				-		Centered Untransformed			1	
erae						5		/•		
₹ 7						•		/:-		
						-5-		10		
0						-3"		•/		
							./			
01	0		10	0		-10 <del>  -2</del> .0	-1.5	-1.0 -0.5 0.0 0	.5 1.0 1.5	2.0

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Comparisons:

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Report Date:

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Analysis:

13-6243-3925/B154204psB

Endpoint		Anal	ysis Type		Sample Lin	k Contr	ol Link	Date Analyzed	Version	1	
Average Leng	gth (mm)		parison		20-0117-84		17-8477	18 Jul-06 2:28 F			
Method		Alt I	Data Tra	ensform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD	
	e t Two-Sample	C>1					>100	. 1	N/A	21,46%	
Group Comp	arisons										
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil/S			0.15020	1.85955	0.4422	26.7415	5	Non-Significant E	ffect		
ANOVA Table											
Source		Squares	Mean Square		F Statistic			Decision(0.05)			
Between	11.66402		11.66402	1	0.02	0.88432	2	Non-Significant E	ffect		
Error	4136.06		517.0074	8					1		
Total	4147.72	359	528.67147	9							
ANOVA Assu	mptions										
Attribute	Test		S	tatistic	Critical	P-Value	•	Decision(0.01)			
Variances	Variance	Ratio F	3	.29688	23.15450	0.27455	5	Equal Variances			
Distribution	Shaplro-	WilkW	0	.95238		0.69675	5	Normal Distribution	on		
Data Summa	iry			Origin	nal Data			Transf	formed Data		
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD	
0	Artificial Soil/S	5	124.62	89.8	153.2	28.167					
100		5	122.46	109.6	146.5	15.513					
Graphics											
15						30-3					
1						-		1	•		
£ 3						20			./		
Average Length (mm)						Untransformed		•			
할 격						5 10		•/			
3 1					1	0					
S 1-						E 3		/•1			
io ve						-10		./•			
₹ ;						]					
0-1				,		-20-	,				
0						-30					
0						00 1		1			
0-1						1	1				
Average Length (mm)	0		100			40	-1.5	1,0 -0.5 0.0 0	0.5 1.0 1.5	2.0	

Comparisons:

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Report Date:

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Analysis:

08-7538-5589/B154204psB

Endpoint		Anal	ysis Type		Sample Lin	k Contro	I Link	Date Analyzed	Ver	rsion
	Wt (Wet, mg)		parison		20-0117-84		7-8477	77 18 Jul-06 2:28 PM CETISv1.1.2		
Method		Alt I	l Data Tr	ansform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Varian	ce t Two-Sample	C>1	Untrans	formed		100	>100	1	N/A	22.90%
Group Com	parisons				1 000					
Control	ys Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil			0.68088	1.85955	0.2576	14.6362		Non-Significant E	ffect	
ANOVA Tab	le									
Source	Sum of	Squares	Mean Squar	e DF	F Statistic	P-Value		Decision(0.05)		
Between	71,7987		71,79871	1	0.46	0.51517		Non-Significant E	ffect	
Ептог	1238.99		154.8743	8						
Total	1310.793	346	226.67305	9	-					
ANOVA Ass	umptions				-					
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		.58421	23.15450	0.16944		Equal Variances		
Distribution	Shapiro-		(	).96988		0.88975		Normal Distribution	on	
Data Summ	ary			Origin	nal Data			Trans	formed Da	ata
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maxin	num SD
0	Artificial Soil/S	5	63.903	41.475	82.338	15.946				
100		5	58.544	46.67	66.636	7.4477				
Graphics								,		
2 1						20-3 15-3				1
Average AG Wt (Wet, mg)						- 1				
× 1					*	Untransformed		i		
<b>\$</b> 1					2	story 5		10/6		
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906						5 -5				
Ave						-10		1		
						-15-	/			
0						-20-	/			
						-25	•	i		
						. 75				
. 0	0		100	1		-2.0	-1.5	1.0 -0.5 0.0	5 1.0	1.5 2.0

Analyst:\_

Comparisons:

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Report Date:

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8-4706-2181/B154204psB

<b>CETIS Analysi</b>	s Detail			Report Date: Analysis:	08
Plant Bioassay - Chro	nic				
Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	

Endpoint	Analysi	s Type	Sample L	ink Co	ntrol Link	Date Analyzed	1	Version
Average AG Wt (Dry, mg)	Compar	ison	20-0117-8	3477 20-	0117-8477	18 Jul-06 2:28	PM (	CETISv1.1.2
Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C>T	Untransformed		100	>100	1	N/A	32.76%

#### **Group Comparisons**

Control	VS	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Artificial So	il/Sedi	100	0.77289	1.85955	0.2309	4.04627	Non-Significant Effect

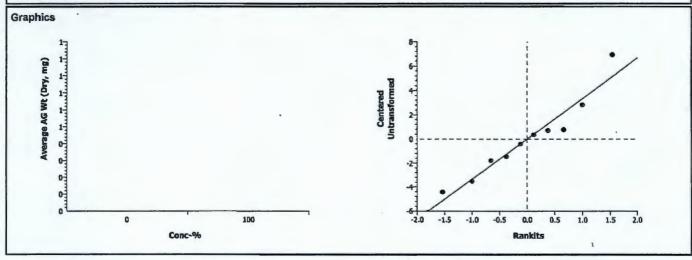
### ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)	
Between	7.070768	7.070768	1	0.60	0.46181	Non-Significant Effect	
Error	94.69466	11.83683	8				
Total	101.765432	18.907601	9	_			

#### ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	
Variances	Variance Ratio F	25.62671	23.15450	0.00825	Unequal Variances	
Distribution	Shapiro-Wilk W	0.94329		0.59015	Normal Distribution	

Data Sumn	Data Summary			Original Data				Transformed Data				
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD		
0	Artificial Soil/S	5	12.351	7.9275	19.276	4.7733						
100		5	10.669	9.2133	11.46	0.9429						



Comparisons:

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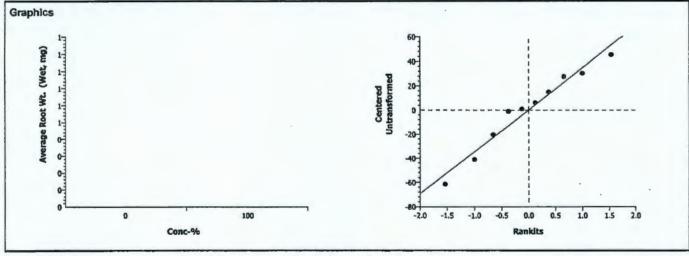
Report Date:

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Analysis:

13-2902-4328/B154204psB

Endpoint Average Root Wt. (	(Wet, mg)		ysis Type parison		20-0117-84			Date Analyzed 18 Jul-06 2:28 Pl	Version  M CETISv1	.1.2
Method		Alt F	l Data Tr	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Tv	vo-Sample	Ç>1	Untrans	sformed		100	>100	1	N/A	36.51%
Group Comparison	ns									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sedi	100		0.55061	1.85955	0.2985	41.3408		Non-Significant Eff	fect	
ANOVA Table										
Source	Sum of S	auares	Mean Squar	re DF	F Statistic	P-Value		Decision(0.05)		
Between	374.6069	-	374.6069	1	0.30	0.59693		Non-Significant Ef	fect	
Ептог	9884.932		1235.616	8						
Total	10259.53	85	1610.2234	9	-					
ANOVA Assumption	ons									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		13.46452	23.15450	0.02736		Equal Variances		
Distribution	Shapiro-	Vilk W	(	0.95666		0.74721		Normal Distribution	n	
Data Summary			•	Origin	nal Data			Transfe	ormed Data	
Conc-% Con	trol Type	Count	Mean	Minimum	Maximum	SD	Mear	n Minimum	Maximum	SD
0 Artif	icial Soil/S	.5	113.23	51.638	158.52	47.962				
100		5	100.99	80.410	115.9	13.071				



Comparisons:

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Report Date:

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Analysis: 07-1398-9419/B154204psB

Plant Bioassa	y - Chronic									CH2M
Endpoint		Ana	lysis Type		Sample Li	nk Contr	ol Link	Date Analyzed	Version	
Average Root	Wt. (Dry, mg)	Con	parison		20-0117-84	77 20-01	17-8477	18 Jul-06 2:28 Pl	M CETISV	1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	e t Two-Sample	C>	T Untra	insformed		100	>100	1	N/A	44.15%
Group Compa	arisons								×	
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	edi 100		0.68096	1.85955	0.2576	3.47318	3	Non-Significant Ef	fect	
ANOVA Table										
Source	Sum of S	Squares	Mean Squ	are DF	F Statisti	c P-Value	•	Decision(0.05)		
Between	4.044082		4.044082	1	0.46	0.51512	2	Non-Significant Ef	fect	
Error	69.77014 8.721268									
Total	73.81422	233	12,765349	9						
ANOVA Assu	mptions	444								
Attribute	Test			Statistic	Critical	P-Value	9	Decision(0.01)		
Variances	Variance	Ratio F		240.25800	23,15450	0.00010	)	Unequal Variance	S	
Distribution	Shapiro-	Wilk W		0.83816		0.04194	1	Normal Distributio	n	
Data Summai	гу			Origi	inal Data			Transfe	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial Soil/S	5	7.8666	3.78	14.108	4.1678				
100		5	6.5947	6.2133	6.925	0.2689				
Graphics										
1.0						83		i		
© 0.9						6		1	•	
≥ 0.8						7				/
ot Wt. (Dry, mg)						entered ansformed				
₹ 0.6						ansform				

1.0

1.5 2.0

-57-

-1.5

-1.0

-0.5

0.0

Rankits

0.5

0.0

100

Comparisons:

Page 8 of 9

Report Date:

18 Jul-06 2:29 PM

Analysis:

Decision(0.01)

Equal Variances

17-2700-9201/B154204psB

<b>CETIS</b>	Analys	is Detail
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Attribute

Variances

Test

Variance Ratio F

Endpoint	An	alysis Type		Sample L	nk Contro	ol Link	<b>Date Analyzed</b>		Version
Average Total Wt (		mparison		20-0117-8		17-8477	18 Jul-06 2:28 I		CETISv1.1.2
Method	Alt	H Data Tra	nsform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Tv	vo-Sample C >	T Untransf	ormed		100	>100	1	N/A	28.88%
Group Compariso	ns								<del>,,</del>
Control vs	Conc-%	Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soll/Sedi	100	0.63977	1.85955	0.2701	51.156		Non-Significant E	ffect	
ANOVA Table									
Source	Sum of Squares	Mean Square	DF	F Statisti	c P-Value	•	Decision(0.05)		
Between	774.4072	774.4072	1	0.41	0.54020	)	Non-Significant E	ffect	
Error	15135.88	1891.985	8						
Total	15910.2910	2666,3927	9						

Distribution	Snapiro-	VVIIK VV		0.94991		0.66738	Nor	mal Distribution			
Data Summ	ary			Origin	nal Data		Transformed Data				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD	
0	Artificial Soil/S	5	177.14	93.113	240.86	58.331					
100		5	159.54	127.08	178.35	19.531					

Critical

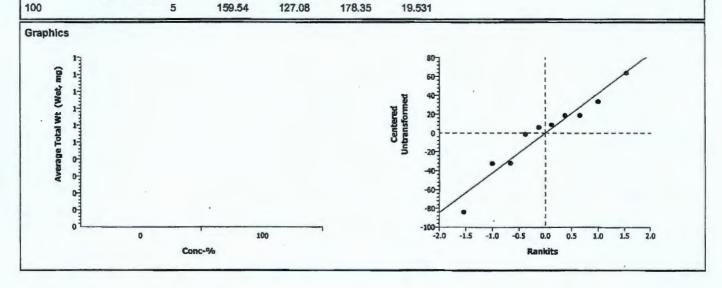
23.15450

P-Value

0.05688

Statistic

8.91986



Approval:

Report Date: **CETIS Analysis Detail** 

Comparisons:

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18 Jul-06 2:29 PM

Analysis:

07-7227-4367/8154204psB

Plant Bioass	ay - Omonio				*		-				CH2M I
Endpoint			sis Type		Sample Lir		ol Link	Date Analyzed		Version	
Average Total	Wt (Dry, mg)	Comp	parison		20-0117-84	77 20-011	17-8477	18 Jul-06 2:28 l	PM	CETISv1	.1.2
Method		Alt H		ransform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD
Equal Variance	ce t Two-Sample	C>T	Untran	sformed		100	>100	1	N/A		36.53%
Group Comp	arisons										
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil/S	Sedi 100	•	0.74372	1.85955	0.2392	7.38505		Non-Significant E	ffect		
ANOVA Table	e										
Source	Sum of	Squares	Mean Squa	re DF	F Statistic	P-Value	•	Decision(0.05)			
Between	21.80978		21.80978	1	0.55	0.47832		Non-Significant E	ffect		
Ептог	315.4434		39.43043	8							
Total	337.2532		61.24021	9	-						
ANOVA Assu	umptions	· · · · · · · · · · · · · · · · · · ·									
Attribute	Test			Statistic	Critical	P-Value	•	Decision(0.01)			
Variances	Variance	Ratio F		63.94633	23.15450	0.00141		Unequal Variance	es		
Distribution	Shapiro-	Wilk W		0.88617		0.15347		Normal Distributi	on		
Data Summa	iry			Origin	nai Data			Trans	formed	Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimun	n Ma	ximum	SD
0	Artificial Soil/S	5	20.217	12.223	33.384	8.8117					
100		5	17.264	15.427	18.21	1.1019					
Graphics									12		
- 1						157		:			
Average Total Wt (Dry, mg)						1		1			/
Dry						Untransformed					
1									,		
<u> </u>						5- Suppose		į	/.		
1					•	1		/			
g 0						0}					
A o						1		• /			
						-5-					
0						1	./				
0-											
Average Total Wt (Dry, mg)				_		-10	/_	1			_
0	0		100			-10	-1.5	-1.0 -0.5 0.0	0.5 1.4	0 1,5	2.0

#### **BLUEGRASS GROWTH TEST**

inilials:	Day 0	Day 12 N J	Day 14	Day 16_ HO	D	ay 2	Day 26 1500		
			Samp	ple ID: E284	701-S	O12	31542-05	-	
			#	seeds germi	inated	talke		F	Н
CONC.	REPLICATE	PRE-EMERGENCE (12 days after planting)	@ EMERGENCE (14 days after planting)	POST- EMERGENO (16 days after planting)	9	7-DAYS POST- EMERGENCE (21 days after planting) 30	14-DAYS POST- EMERGENCE (28 days after planting)	INITIAL (@ planting)	FINAL (25 days after planling)
	A	0	1	4	4	4 1	1		(28 days after stanling)  7.2  Led says  Led says  Led says  Led show  The shoot  The sh
100%	В	1	3	4	210	4 2	2		_
	С	O	2	4	5	5 5	4	6.8	7.2
	D	0	2	3	3	3 2	à		
	E	0	0	0	1	10	0		
Beetleste A	mediu	by thin down to 5 Seed	ورساء طسه		-	smult ha	un dest	-L.t.	
Replicate A Replicate B	-	- in gad sh	- , 0	down to	1	, ,		1 b + 3	Leed scale
Replicate C	2 1.	IN SAU	show +	Small	-	Eureen +1	, ,	small style	1 1 3
Replicate D	2 mels	um w/ 16	our me	3 socen	sh	1	bown de	ed , small	1 1
Replicate E	1 5.500	e shut d	and shall	-					,
			,						
Days Post-Em	ergence: Describe	shoot appearance:		- 1	1		1 -1 1		to 0 -1
Replicate A	1 Smal	le plant	, 2 bour	n Show	oto	-59		5 7+	otal sho
Raplicate 6	1 2 /	Smill E	/ medin	n plant	-	med o		rown Sh	octa
Replicate C	3 smal	Il medi	my en	h plan	. 1	us 1 5	rown sho	-et	
Replicate D	2 Smul	il plants	1 hes	- only	19x	ren Shor	t, other	hus 1 br	own Show
Replicate E	100	and a			_				
sure Shoot He	eight:		1st Seedling	2nd Seedlin		3rd Seedling	4th Seedling	5th Seedling	del at
(bruang evo		Replicate A	34 mm		mm	26 m	m —mm	mn	# Show
		Replicate B	65 mm		mm	Marie m		- ma	9,8
		Replicate C	28 mm		mm	1363km	m 2/0 mm	mn	4,6,5
		Replicate D	55 mm	25	mm	70 m	m mm	- min	4,5
		Replicate E	mm	-	mm	m	m mm	mn	י
Baure Shoot W	eight:		Tin Tare Wt. (mg)	Wet WI (mg		_Dry Wt. (mg)	-		
(punous ava		Raplicate A	1008.22	1037	_	1013.40	-		
		Replicate B	984.32	1060		1000.8			
		Replicate C	998.06	1116.	_	1029,0			
		Replicate D	1006.64	1056.	6	1020.20	9		
		Replicate E	1012.09		_	-	_		
Describe root a	фревтпсе:								
Replicate A									
Replicate B					•				
Replicate C									
Replicate D									
Replicate E									
asure Root Len	igth:		1st Seedling	2nd Seedlin	ng	3rd Seedling	4th Seedling	5th Seedling	
gest rool)		Replicate A	95 mm		mm	m	m mm	mr	n
		Replicate B	125 mm		mm	m		៣០	n ·
		Replicate C	97 mm		mm	43 m	73 mm	mo	n
		Replicate D	92 imm	, 31	mm	m	m mm	mn	n
		Replicate E	mm	n	mm	m	m · mm	mn	n
	rah h		The Town 14 1 1 1			Devisit 4	7		
	gne		Tin Tare Wt. (mg)	1035.(		995 . 90	F		
asure Root We		Replicate A	110:31	1145	_		1		
asura Root We ogest root)		Replicate B	1001.64			1019.8			
			1029 17	1157	1 1	17/17 7	1 1		
		Replicate C	1039.63	1153	-	1047,7			
			1039.63 988.21 1005.00	1037.	-	993.97			

-59

-60-

Report Date:

18 Jul-06 2:52 PM

Test Link:

06-7949-1832/B154205psB

Plant Bioassay	y - Chronic						CH2M Hill
Test No: Start Date: Ending Date: Setup Date:	25 Jan-06		Plant Chronic ASTM E1963-02 (200	02)	Duration: Species: Source:	N/A Poa sandbergii	
Comments:	recalculated Height and Le	ngth data J	uly 18, 2006				
Sample No: Sample Date: Receive Date: Sample Age:	15 Nov-05	Code: Material: Source: Station:	B1542-05 Soil Hanford		Client: Project:		
Comments:	J10DV1, E284701						
Comparison S Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method	
03-1273-9210 15-6901-9966	% Germination Average Height (mm)	< 100 100	100 > 100	N/A N/A	31.94% 20.15%	Equal Variance t To Equal Variance t To	
16-8177-0725 07-6293-8217	Average Length (mm) Average AG Wt (Wet, mg	•	100	N/A N/A	22.34% 24.95%	Equal Variance t To	wo-Sample
	Average Root Wt. (Wet, in Average Root Wt. (Dry, mg)	_	100 100 100	N/A N/A N/A	38.05% 43.27% 54.04%	Equal Variance t To Equal Variance t To Equal Variance t To	wo-Sample
08-5494-7845	Average Total Wt (Wet, m Average Total Wt (Dry, mg	ng < 100	100 100	N/A N/A	33.77% 43.45%	Equal Variance t To Equal Variance t To	wo-Sample

( > 100% rop E removed from state for all but % germination endpoint (0% germ)

Approval:

000-092-101-1

Report Date:

18 Jul-06 2:52 PM

Test Link: 06-7949-1832/B154205psB

% Germinal	tion Summary							
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.36000	0.00000	0.80000	0.13266	0.29665	82.40%
Average H	eight (mm) Summ	ary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	45.68	36.700	55.8	3.3695	7.5344	16.49%
100		5	41.75	34	50.5	3.4187	6.8374	16.38%
Average Le	ength (mm) Sumn	nary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	124.62	89.800	153.2	12.597	28.167	22.60%
100		5	91.325	83.300	100.5	3.9303	7.8606	8.61%
Average AG	Wt (Wet, mg) Si	ummary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	63.903	41.475	82.338	7.1313	15.946	24.95%
100		5	30.859	24.98	37.84	2.6585	5.317	17.23%
Average AC	Wt (Dry, mg) Su	mmary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	12.351	7.9275	19.276	2.1347	4.7733	38.65%
100		5	6.7013	5.2401	8.25	0.6181	1.2361	18.45%
Average Ro	oot Wt. (Wet, mg)	Summa	ry					
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	113.23	51.638	158.52	21.449	47.962	42.36%
100		5	40.987	24.595	68.755	10.002	20.005	48.81%
Average Ro	oot Wt. (Dry, mg)	Summar	у					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	7.8666	3.78	14.108	1.8639	4.1678	52.98%
100		5	3.33	2.02	5.8500	0.8586	1.7172	51.57%
Average To	otal Wt (Wet, mg)	Summa	ry					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	177.14	93.113	240.86	26.086	58.331	32.93%
100		5	71.846	49.575	106.59	12.573	25.146	35.00%
Average To	otal Wt (Dry, mg) S	Summar	y		=			
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
				12,223	33.384	3.9407	8.8117	43.58%
0	Artificial Soil/S	5	20.217	12,220	00.004	0.0701	0.0111	10.00 /0

Report Date:

18 Jul-06 2:52 PM

Test Link:

06-7949-1832/B154205psB

% Germinal	tion Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
100		0.20000	0.40000	0.80000	0.40000	0.00000
Average He	eight (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	50.6	41.8	55.8	36.7000	43.5
100		34	50.5	42.5	40	Missing
Average Le	ength (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	138.800	142	153.2	99.3000	89.8000
100		95	100.5	83.3000	86.5	Missing
Average A0	Wt (Wet, mg) De	etail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S		55.1900	82.338	73,2233	41.4750
100		30.98	37.84	29.635	24.98	Missing
Average A0	Wt (Dry, mg) Del	tail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751
100		5.24005	8.25	6.50499	6.81	Missing
Average Ro	oot Wt. (Wet, mg)	Detail				
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
100		42.23	68.755	28,3675	24,5950	Missing
Average Ro	oot Wt. (Dry, mg) I	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4.295
100		2.57001	5.85001	2.01999	2.87997	Missing
Average To	otal Wt (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soll/S		195.814	240.862	145.247	93.1125
100		73.21	106.595	58.0025	49.575	Missing
Average To	otal Wt (Dry, mg) I	Detail				
	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Conc-%						
Conc-%	Artificial Soil/S	23.9280	18.946	33.384	12.6066	12.2225

Comparisons:

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Report Date:

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Analysis: 03-1273-9210/B154205psB

Plant Bioass	say - Chronic									CH2M
Endpoint		Ana	lysis Type		Sample Li	nk Contro	ol Link	Date Analyzed	Version	
% Germination	on	Con	nparison		06-7949-18	32 06-794	9-1832	18 Jul-06 2;51 Pt	M CETISVI	1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL	LOEL.	Toxic Units	ChV	PMSD
Equal Varian	ce t Two-Sample	C>	T Angula	ar (Corrected)		<100	100		N/A	31.94%
Group Com	parisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil	Sedi 100		3.31955	1.85955	0.0053	0.3208		Significant Effect		
ANOVA Tab	le									
Source	Sum of S	Squares	Mean Squa	are . DF	F Statistic	P-Value		Decision(0.05)		
Between	0.819863		0.819864	1	11.02	0.01055		Significant Effect		
Error	0.595213	35	0.074402	8						
Total	1.415077	733	0.8942655	9						
ANOVA Ass	umptions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		2.49465	23.15450	0.39757		Equal Variances		
Distribution	Shapiro-	Wilk W		0.95095		0.67970	)	Normal Distribution	1	
Data Summ	агу			Origin	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mear	n Minimum	Maximum	SD
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.17889	1.20	581 0.88608	1.34528	0.20635
100		5	0.36000	0.00000	0.80000	0.29665	0.633	315 0.22551	1.10715	0.32592
Graphics										
1.0	1					0.5		1	•/	
0.5	1 1					0.4				
E 0.8	1		1			0.3				
D 0.7	4					Corr. Angle			/ -	
Ē 0.6	<del></del>			Reject Null		0.1				
% Germination	i-l				,	5 0.0 -				
8 0.4	3					-0.1		1		
-			Ť			0.2		•		

Rankits

0.2

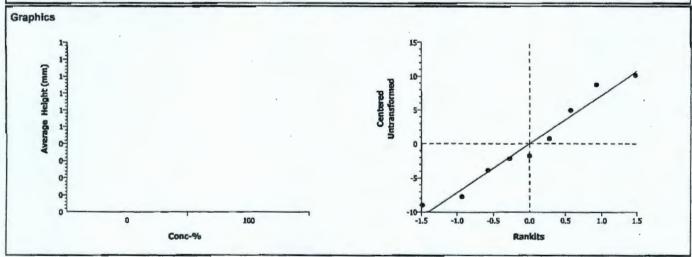
Comparisons:

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Report Date: Analysis: 18 Jul-06 2:52 PM 15-6901-9966/B154205psB

 _	 		-
		CHOM	L

Endpoint		Ana	lysis Type		Sample Li	nk Contr	ol Link	Date Analyzed	Version	
Average Height (r	nm)		nparison		06-7949-18		9-1832	18 Jul-06 2:51 PM		.1.2
Method		Alt	H Data T	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t T	wo-Sample	C>	T Untran	sformed		100	>100	1	N/A	20.15%
Group Comparise	ons									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sedi	100		0.80875	1.89458	0.2226	9.20642	2	Non-Significant Eff	ect	
ANOVA Table										
Source	Sum of	Squares	Mean Squa	re DF	F Statistic	c P-Value		Decision(0.05)		
Between	34.32199	9	34.32199	1	0.65	0.44527		Non-Significant Eff	ect	
Error	367.318		52.474	7						
Total	401.6399	954	86.795986	8						
ANOVA Assumpt	ions									
Attribute	Test			Statistic	Critical	P-Value	9	Decision(0.01)		
Variances	Variance	Ratio F		1.21427	46.19462	0.90942	2	Equal Variances		
Distribution	Shapiro-	Wilk W		0.94354		0.61966	3	Normal Distribution		
Data Summary				Origi	nal Deta			Transfo	rmed Data	
Conc-% Co	ntroi Type	Count	Mean	Minimum	Maximum	SD	Mean	n Minimum	Maximum	SD
0 Art	ificial Soil/S	5	45.68	36.7	55.8	7.5344				
100		4	41.75	34	50.5	6.8374				



Comparisons:

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16-8177-0725/R154205nsR

DE 119 A	lalysis De	lall						Analysis:	16-8177-0725	/B154205ps
Plant Bioassa	ay - Chronic									CH2M Hill
Endpoint		Ana	lysis Type		Sample Lir		Link	Date Analyzed	Version	
Average Leng	gth (mm)	Com	nparison		06-7949-18	32 06-7949	9-1832	18 Jul-06 2:51 PM	M CETISV1	.1.2
Method		Alt	H Data	Transform	Zeta	NOEL I	OEL	Toxic Units	ChV	PMSD
Equal Varianc	e t Two-Sample	C>	T Untra	nsformed		<100	100		N/A	22.34%
Group Compa	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD	1	Decision(0.05)		
Artificial Soil/S	Sedi 100		2.26582	1.89458	0.0289	27.8398		Significant Effect		
NOVA Table	)									
Source	Sum of	Squares	Mean Squ	are DF	F Statistic	: P-Value		Decision(0.05)		
Between	2463.46		2463.46	1	5.13	0.05783	1	Non-Significant Effe	ect	
Error	3358.855	5	479.8364	7						
Total	5822.315	519	2943.2966	8						
ANOVA Assu	mptions									
Attribute	Test			Statistic	Critical	P-Value	1	Decision(0.01)		
/ariances	Variance	Ratio F		12.83999	46.19462	0.06268	-	Equal Variances		
Distribution	Shapiro-	Wilk W		0.96390		0.83816		Normal Distribution		
Data Summa	ry			Ortgi	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	124.62	89.8	153.2	28.167				
100		4	91.325	83.3	100.5	7.8606				
Graphics					•			7/1/20		
17						303		1	/	-
2 1						20			/	
Average Length (mm)								1	9/"	
<b>5</b> 1					1	Untransformed		/		
를 더						mister of				
8 1						5 5		. 9		
5 0						⊃ -10-		/		
₹ 0							/			
						-20-	/.	-		
•						-30		1		
Average Length (mm)						-30	•	. !		

1.0

0.5

0.0

Rankits

Approval:

100

Report Date: CETIS Analysis Detail

Comparisons:

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18 Jul-06 2:52 PM

Analysis:

07-6293-8217/B154205psB

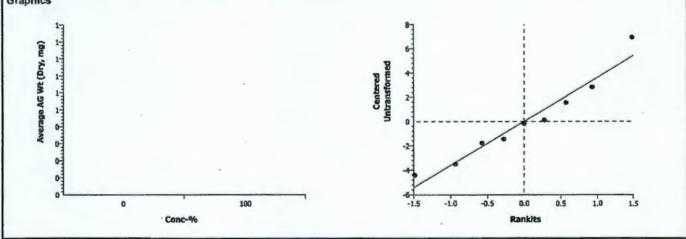
							=			
Endpoint			ysis Type		Sample Lin			ate Analyzed	Version CETISv1	4.0
Average AG Wt (Wet, mg)		Com	parison		06-7949-18	06-7949-1832 06-7949-		-1832 18 Jul-06 2:51 PM		.1.2
Method		Alt H	Data T	ransform	Zeta	NOEL L	OEL T	oxic Units	ChV	PMSD
Equal Varianc	e t Two-Sample	C>1	T Untransformed			<100 1	00		N/A	24.95%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD	Dec	cision(0.05)		
Artificial Soil/S	iedi 100		3.92614	1.89458	0.0029	15.9458	Sig	nificant Effect		
ANOVA Table	1									
Source	Sum of S	Squares	Mean Squa	are DF	F Statistic	P-Value	Dec	cision(0.05)		
Between	2426.535		2426.535	1	15,41	0.00570		nificant Effect		
Error	1101.93		157.4186	7						
Total	3528.464	184	2583.9533	8						
ANOVA Assu	mptions		144.44							
Attribute	Test ·			Statistic	Critical	P-Value	Dec	cision(0.01)		
Variances				8.99470	46.19462	0.10183		al Variances		
Distribution	Shapiro-	Wilk W		0.98165		0.97222	Noi	mal Distribution	Ď.	
Data Summa	ry			Origi	nal Data Transformed Data					
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	63.903	41.475	82.338	15.946				
100		4	30.859	24.98	37.84	5.317				
Average AG Wt (Wet, mg) Average AG Wt (Wet, mg)						20 -10 -10 -15 -15 -10 -15 -15 -15 -15 -15 -15 -15 -15 -15 -15	• •		/	
0-										

Comparisons:

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Report Date:

Plant Bioassay - C	hronic									СН2М Ні		
Endpoint		Analy	ysis Type		Sample Lie	nk Con	trol Link	Date Analyzed	Version			
Average AG Wt (Dry, mg) Con			parison		06-7949-1832 06-7949-		949-1832	18 Jul-06 2:51 P	CETISv1.1.2			
Aethod		Alt I	l Data T	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD		
qual Variance t Tv	o-Sample	C>T	Untran	sformed		<100	100	***	N/A	38.05%		
Group Comparison	ns							•				
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)				
Artificial Soil/Sedi	100		2,27746	1.89458	0.0284	4.699	77	Significant Effect				
NOVA Table												
Source	Sum of S	Squares	Mean Squa	are DF	F Statistic	P-Val	ue	Decision(0.05)				
Between	70.92812		70.92812	1	5.19	0.056	85	Non-Significant Ef	fect			
Error	95.72236		13.67462	7								
Total	166.6504	82	84.602746	8								
NOVA Assumption	ons											
Attribute	Test			Statistic	Critical	P-Val	ue	Decision(0.01)				
Variances Variance Ratlo F		Ratio F		14.91113	46.19462	0.050	89	Equal Variances				
Distribution	Shapiro-\	Wilk W		0.95295		0.722	40	Normal Distributio	n			
Data Summary			Original Data					Transformed Data				
Conc-% Con	trol Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD		
) Artif	icial Soil/S	5	12.351	7.9275	19.276	4.7733						
100		4	6.7013	5.2401	8.25	1.2361						



Comparisons:

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Analysis:

05-7553-9392/B154205psB

Endantes		Anch	rein Turns		Cample I !-	£ C	211 i=k	Data Analysis	1	ersion			
Endpoint Average Root \	Nt (Wet ma)		sis Type parison		Sample Lir 06-7949-18		ol Link 49-1832	Date Analyzed 18 Jul-06 2:51 P		ETISv1	.1.2		
Avelage NOOL	Tr. (vici, ing)	Com						10 301-00 2.31	.,,	-11041			
Method		Alt F		Transform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD		
Equal Variance	t Two-Sample	C>1	Untra	nsformed		<100	100		N/A		43.27%		
Group Compa	risons												
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)					
Artificial Soil/So	edi 100		2.79386	1.89458	0.0134	48.9926	6	Significant Effect					
ANOVA Table													
Source	Sum of S	Squares	Mean Squ	are DF	F Statistic	P-Value	е	Decision(0.05)					
Between	11599.27		11599.27	1	7.81	0.02676		Significant Effect					
Error	10402.09	)	1486.014	7									
Total	22001.36	72	13085.286	8	_								
ANOVA Assur	nptions			3 606				Tarres Control of the					
Attribute	Test			Statistic	Critical	P-Valu	е	Decision(0.01)					
Variances	Variance	Ratio F		5.74830	46.19462	0.1824	7	Equal Variances					
Distribution	Shapiro-	Wilk W		0.93481		0.5284	9	Normal Distribution	n				
Data Summar	у			Origi	nal Data			Transf	Transformed Data				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Max	imum	SD		
0	Artificial Soil/S	5	113.23	51.638	158.52	47.962							
100		4	40.987	24.595	68.755	20.005							
Average Root Wt. (Wet, mg)						Untransformed	/•		•/		·•		
-	0	Conc-9	10	0		-80	-1.0	-0.5 0.0 Rankits	0.5	1.0	1.5		

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Report Date:

18 Jul-06 2:52 PM

Analysis:

15-2030-1795/B154205psB

Endpoint		Anal	ysis Type		Sample Li	nk Contro	Link D	ate Analyzed	Version	
Average Root \	Vt. (Dry, mg)		parison		06-7949-18			8 Jul-06 2:51 PM	CETISV1	.1.2
Method		Alt 1	H Data	Transform	Zeta	NOEL I	OEL 1	Toxic Units	ChV	PMSD
Equal Variance	t Two-Sample	C>.	T ' Untrar	nsformed		<100	100		N/A	54.04%
Group Compa	risons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD	De	cision(0.05)		
Artificial Soil/So	edi 100		2.0217	1.89458	0.0415	4.25136	Sig	nificant Effect		
ANOVA Table										
Source	Sum of	Squares	Mean Squ	are DF	F Statisti	c P-Value	De	cision(0.05)		
Between	45.73503	3	45.73503	1	4.09	0.08292	No	n-Significant Effe	ect	
Error	78.3276	1	11.18966	7						
Total	124.0626	341	56.924686	8		4				
ANOVA Assur	nptions									
Attribute	Test			Statistic	Critical	P-Value	De	cision(0.01)		
Variances	Variance	Ratio F		5.89043	46.19462	0.17693	Eq	ual Variances		
Distribution	Shapiro-	Wilk W		0.94719		0.65928	No	rmal Distribution		
Data Summar	у			Origi	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	7.8666	3.78	14.108	4.1678				
100		4	3.33	2.02	5.8500	1.7172				
Graphics										
1.03						*		1		
Average Root WL (Dry, mg)						6		1		•
0.8						3		1		
0.7								1		
0.6						2 kg 2			-	
0.5						Centered Untransformed		6	•	
P 0.4						= 0]		9	****	
A 0.3						-2-	•			
						1	/	1		
0.2						40	-	1		
- 1						1		!		
0.2-								0.5 0.0 0	.5 1.0	1.5

Approval:\_

**CETIS Analysis Detail** 

Comparisons:

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Report Date:

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Analysis:

08-5494-7845/B154205psB

F -1 - 1 - 1		Arre	lucia Tum-		Comple !	ink Control	Link	Data Analysis	Version	
Endpoint	al Wt (Wet, mg)		lysis Type parison		Sample L 06-7949-1			Date Analyzed 18 Juli-06 2:51 Pl		
Average Total	a vvt (vvet, mg)	Con	iparison		00-1949-1	032 00-194	9-1032	18 Jul-00 2.51 FI	M CELISA	1.1.4
Method		Alt		Transform	Zeta		LOEL	Toxic Units	ChV	PMSD
Equal Varian	ce t Two-Sample	C>	T Untra	nsformed		<100	100		N/A	33.77%
Group Comp	parisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD	D	ecision(0.05)		
Artificial Soil/	Sedi 100		3.33482	1.89458	0.0063	59.8184	Si	ignificant Effect		
ANOVA Tabl	le									+
Source		Squares	Mean Squ	are DF	F Statisti	ic P-Value	D	ecision(0.05)		
Between	24636.38		24636.38	1	11,12	0.01251		ignificant Effect		
Error	15507.06	6	2215.294	7						
Total	40143.43	365	26851.673	8	_					
ANOVA Ass	umptions									
Attribute	Test			Statistic	Critical	P-Value	D	ecision(0.01)		
Variances	Variance	Ratio F		5.38092	46.19462	0.19823	E	qual Variances		
Distribution	Shapiro-	Wilk W		0.97138		0.90629	N	ormal Distribution	n	
Data Summa	ary			Orig	ginal Data			Transfo	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	177.14	93.113	240.86	58.331				
100		4	71.846	49.575	106.59	25.146				
Graphics										
17						80-7				
8 ]						60		1		/6
Average Total Wt. (Wet, mg)						4		1		
W.						Centered Untransformed 20.			./.	
¥ 1						20-		•		
E 17						5 6 0}-				
P 1						5 -20		. /		
E 0-3						1	. /			
A of						-40		:		
0.3						-60		;		
						-80-		1		
3				1		- 7		E		
Average Total Wt. (Wet, mg)						-100		1		
0-1	0	-	10	0	1	-100	-1.0	-0.5 0.0	0.5 1.0	1.5

Approval:

Comparisons:

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Report Date:

18 Jul-06 2:52 PM

Analysis:

06-5495-1290/B154205psB

Plant Bioass	ay - Chronic									СН2М Н
Endpoint		Ana	lysis Type		Sample Li	nk Control	Link Da	ate Analyzed	Version	
Average Tota	Wt (Dry, mg)	Соп	parison		06-7949-18	332 06-7949	3-1832 18	Jul-06 2:51 PM	CETISV	1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL L	OEL T	oxic Units	ChV	PMSD
Equal Variand	ce t Two-Sample	C >	T Untra	nsformed		<100 1	00		N/A	43.45%
Group Comp	parisons			,	<del></del>					
Control	vs Conc-%		Statistic	Critical	P-Value	MSD	Dec	ision(0.05)		
Artificial Soil/			2.19676	1.89458	0.0320	8.78501	Sign	nificant Effect		
ANOVA Tabl	e									
Source	Sum of	Squares	Mean Squ	are DF	F Statistic	P-Value	Dec	ision(0.05)		
Between	230.5735		230.5735	1	4.83	0.06404		-Significant Effe	ect	
Error	334.4602		47.78003	7						
Total	565.0337		278.35357	8	_					
ANOVA Assu	umptions									
Attribute	Test			Statistic	Critical	P-Value	Dec	cision(0.01)		
Variances	Variance	Ratio F		9.75715	46.19462	0.09127		al Variances		
Distribution	Shapiro-	Wilk W		0.91888		0.38302	Nor	mal Distribution		
Data Summa	агу			Origi	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	20.217	12.223	33.384	8.8117				
100		4	10.031	7.8101	14.100	2.821				
Graphics										
						157				
6 1						-3		-	•	•
Average Total Wt (Dry, mg)						_ 10-		i		
£ 1						Untransformed		į		
* 1						a L		į		
15 14 15 14						Sup 5				
1						"특 ]		1/		
ू ल						0]				
₹ 0-						. 1	•			
0						-5-				
. 1						1	/.			
0-3								i		
Average Total Wk (Dry, mg)						-10				
01	0	- 1	10	0		-1.5	-1.0	0.5 0.0	0.5 1.0	1.5

**BLUEGRASS GROWTH TEST** Client: Hanford Project Test Start Date: 01/25/2005 Day 26 2-Day 0 3 Day 12 NJ Day 14 Br Day 16 HJ Day 21 10 3 542.06 Sample ID: E285701-SOI2 рΗ # seeds germinated #4/120 7-DAYS POST-EMERGENCE POST-14-DAYS POST-@ EMERGENCE FINAL (28 days after planting) PRE-EMERGENCE INITIAL EMERGENCE **EMERGENCE** CONC REPLICATE (12 days after planting) (14 days after planting) (18 days after planting) 21 days after planting) 2 (28 days after planting) (@ planting) 55 0 5 56 100% 7.3 5 6 6 6-25 7.3 5 C 5 5454 4 2 D 2 34 medium plant is good shape , 4 single or duble short plants furned brown. 4 medown 4 = sout in good shape (green color/multiple shate) - I small removed Replicate C 4 medium in good shape + 1 medium w/ 3 suce shorts + 2 Sown shorts. 1 Snell brown removed 3 medium: a cut shape + 1 smill brown Replicate D I return in god stope + 23 small brown Replicate E 14-Days Post-Emergence: Describe shoot appearance I large - good color - no brown 4 medium + 4 smill - sout color 4 mecsum good dur- no brun -( soull w/4 brun shorts + 1 green - suit culor + 3 netsom Replicate D Replicate 2 medium - buthor/ bouning tops on a couple of green should # shouts Maasure Shoot Height: 1st Seedling 2nd Seedling 3rd Seedling 4th Seedling 64 mm Replicate A (bayon ground) 22 " 8,12,4,5,9 42 mm 46 mm Replicate 8 8,11,10 44 mm 39 mm ullo mm 10 mm 41 Replicate C 60 mm 40 mm 67 mm Replicate D 46 mm 10,9 35 mm Replicate E Measure Shoot Weight Tin Tare Wt. (mg) Wet Wt (mg) Dry Wt. (mg) 1002.83 1113.5 1011 ,77 Replicate A (above ground) 1008:30 1191.2 1043.83 Reolicate B 998.00 1753.8 1046.67 Replicate C 1002.13 1201.0 1034 . 73 Replicate D 1005.79 1080.6 104 ,71 Repticate E Describe root appearance: 1st Seedling 2nd Seedling 3rd Seedling 4th Seedling 5th Seedling 142 (longest rool) Replicate A 75 mm 94 100 Replicate B ma 97 136 mm Replicate C UY 101 100 ma 102 114 106 mm Replicate D 123 Replicate E

Measure Root Weight	
(longest root)	

		Tin Tare Wt. (mg)	Wet Wt (mg)	Dry Wt. (mg)
	Replicate A	958.26	1056.2	464.56
	Replicate B	966.35	1292-9	986 .11
I	Replicate C	1000.09	1455.5	1030.67
	Replicate D	992.46	1304.1	1006.98
	Replicate E	1002.78	1131.3	1011 .75

-70-

90 glans dry wh /20. \* Fop D dry 3D. I of the 5 counted us germinated on days 16,21,23 was identified as a separate species (20cm full moders 30). Remark and my 30

73-

18 Jul-06 3:05 PM

CETIS Te	st Summary					ort Date: Link:	18 Jul-06 3:05 PM 16-3653-4731/B154206psB
Plant Bioassa	y - Chronic						CH2M HIII
Test No:	19-1698-5639	est Type:	Plant Chronic		Duration:	N/A	
Start Date:	25 Jan-06	Protocol:	ASTM E1963-02 (2	2002)	Species:	Poa sand	bergii
<b>Ending Date:</b>	ı	Dil Water:			Source:		
Setup Date:	25 Jan-06	Brine:					
Comments:	recalculated Height and Le	ngth data J	July 18, 2006				
Sample No:	09-1115-2498	Code:	B1542-06		Client:		
Sample Date:	16 Nov-05	Material:	Soil		Project:		
Receive Date:		Source:	Hanford				
Sample Age:	70d 0h	Station:					
Comments:	J10DV3, E285701						**
Comparison S	Summary						
Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method	
11-4813-1916	% Germination	100	> 100	N/A	37.51%	Equal Va	ariance t Two-Sample
09-3544-9763	Average Height (mm)	100	> 100	NA	25.79%	Equal Va	ariance t Two-Sample
01-3057-6016	Average Length (mm)	100	> 100	N/A	24.52%	Equal Va	ariance t Two-Sample
09-4937-3263	Average AG Wt (Wet, mg)	100	> 100	N/A	44.89%	Equal Va	ariance t Two-Sample
17-9077-0135	Average AG Wt (Dry, mg)	100	> 100	NA	33.63%	Equal Va	ariance t Two-Sample
10-4892-3286	Average Root Wt. (Wet, m	ng 100	> 100	N/A	37.75%	Equal Va	ariance t Two-Sample
13-4344-1355	Average Root Wt. (Dry, mg	100	> 100	N/A	45.34%	Equal Va	arlance t Two-Sample
07-1360-0140	Average Total Wt (Wet, m	g 100	> 100	N/A	34.83%	Equal Va	ariance t Two-Sample
06-4394-4993	Average Total Wt (Dry, mg	100	> 100	· N/A	37.33%	Equal Va	ariance t Two-Sample

**CETIS Test Summary** 

Report Date: Test Link: 18 Jul-06 3:05 PM 16-3653-4731/B154206psB

% Germinat	ion Summary							
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.64000	0.20000	1.00000	0.16000	0.35777	55.90%
Average He	eight (mm) Summ	агу						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soll/S	5	45.68	36.700	55.8	3.3695	7.5344	16.49%
100		5	47.36	36	64	5.3659	11.998	25.33%
	ength (mm) Summ	nary		-				
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	124,62	89.800	153.2	12.597	28.167	22.60%
100	7 11 11 10 10 10 10 10 10	5	107.74	87.6	148	10.557	23.607	21.91%
	Wt (Wet, mg) Si			2			,	
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soll/S	5	63.903	41.475	82.338	7,1313	15.946	24.95%
100		5	60.421	36.58	110.67	13.681	30.591	50.63%
	Wt (Dry, mg) Su							
			Mean	Minimum	Maximum	SE	SD	CV
Conc-%	Control Type Artificial Soll/S	Reps 5	12.351	7,9275	19.276	2.1347	4.7733	38.65%
100	Artificial Soli/S	5	8.9213	7.106	10.867	0.6582	1.4718	16.50%
				7.100	10.007	0.0002	1,47 10	10.30 %
Average Ro	ot Wt. (Wet, mg)	Summa	ry					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	113.23	51.638	158.52	21.449	47.962	42.36%
100		5	84.544	64.510	103.88	8.2686	18.489	21.87%
Average Ro	ot Wt. (Dry, mg)	Summar	у					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	7.8666	3.78	14.108	1.8639	4.1678	52.98%
100		5	5.1266	3.9520	6.24	0.4523	1.0114	19.73%
Average To	tal Wt (Wet, mg)	Summa	ry				77. J. 77. T. 7.	
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S		177.14	93.113	240.86	26.086	58.331	32.93%
100		5	144.97	101.89	208.61	20.496	45.832	31.62%
	tal Wt (Dry, mg) \$							
				Minimum	Maximum	SE	SD	CV
Conc %	Control Tuno	Kone						
Conc-%	Control Type Artificial Soil/S	Reps 5	Mean 20.217	12.223	33.384	3.9407	8.8117	43.58%

## **CETIS Test Summary**

Report Date:

18 Jul-06 3:05 PM

Test Link:	16-3653-4731/B154206psB

% Germina	tion Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
100		0.20000	1.00000	1.00000	0.60000	0.40000
Average H	eight (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	50.6	41.8	55.8	36.7000	43.5
100		64	38.6	36	55,7000	42.5
Average L	ength (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soll/S	138.800	142	153.2	99.3000	89.8000
100		148	87.6	95.8000	107.300	100
Average A	Wt (Wet, mg) De	etail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	67.2900	55.1900	82.338	73.2233	41.4750
100		110.67	36.58	51.1600	66.2900	37.405
Average AC	Wt (Dry, mg) De	tail				
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751
100		8.94000	7.10599	9.73401	10.8667	7.96002
Average Ro	oot Wt. (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
100		97.9399	65.3100	91.082	103.88	64.5100
Average Ro	oot Wt. (Dry, mg) I	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4.295
100		6.23999	3.95200	6.11600	4.83999	4.48499
Average To	otal Wt (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S		195.814	240.862	145.247	93.1125
100		208.61	101.890	142.242	170.17	101.915
Average To	otal Wt (Dry, mg) [	Detail				
	Control Type	Rep 1	Rep 2	/ Rep 3	Rep 4	Rep 5
Conc-%	COUNTY ADA					
Conc-%	Artificial Soil/S	23.9280	18.946	33.384	12.6066	12.2225

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Report Date:

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Analysis: 11-4813-1916/B154206psB

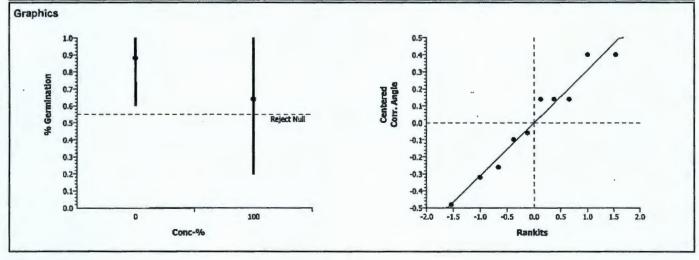
CETIS	Analysis	Detail	
			-

**ANOVA Assumptions** 

Plant Bioassay - C	hronic								CH2M Hi
Endpoint	An	alysis Type		Sample Li	nk Cor	trol Link	Date Analyzed		Version
% Germination	Co	mparison		16-3653-47	731 16-3	3653-4731	18 Jul-06 3:05 !	PM	CETISv1.1.2
Method	Alt	H Data Tra	ansform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Tv	vo-Sample C	T Angular	(Corrected)		100	>100	1	N/A	37.51%
Group Compariso	ns								
Control vs	Conc-%	Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sedi	100	1.30924	1.85955	0.1134	0.370	44	Non-Significant E	ffect	
ANOVA Table									
Source	Sum of Squares	Mean Squar	e DF	F Statisti	c P-Va	lue	Decision(0.05)		
Between	0.1700585	0.170059	1	1.71	0.226	80	Non-Significant E	ffect	
Error	0.7936922	0.099212	8						
Total	0.96375073	0.2692700	9						

Data Summary		Orig	inal Data		Transformed Data	
Distribution	Shapiro-Wilk W	0.94392		0.59737	Normal Distribution	
Variances	Variance Ratio F	3.65997	23.15450	0.23677	Equal Variances	
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	

Data Sumn	Data Summary			Original Data				Transformed Data				
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD		
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.17889	1.20581	0.88608	1.34528	0.20635		
100		5	0.64000	0.20000	1.00000	0.35777	0.94500	0.46365	1.34528	0.39477		



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Report Date:

18 Jul-06 3:05 PM

Analysis:

09-3544-9763/B154206psB

Endpoint			ysis Type		Sample Lin		ol Link	Date Analyzed		ersion	
Average He	ight (mm)	Comp	parison		16-3653-47	31 16-365	3-4731	18 Jul-06 3:05 F	PM CI	ETISv1	.1.2
Method		Alt H	l Data T	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD
Equal Varian	ice t Two-Sample	C>1	Untrans	sformed		100	>100	1	N/A		25.79%
Group Com	parisons										
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil			-0.2651	1.85955	0.6012	11.7823		Non-Significant E	ffect		
ANOVA Tab	le					-					
Source	Sum of S	Squares	Mean Squa	re DF	F Statistic	P-Value		Decision(0.05)			
Between	7.056003		7.056003	1	0.07	0.79760		Non-Significant E	ffect		
Error	802.92		100.365	8							
Total	809.9759	986	107.42100	9							
ANOVA Ass	umptions							···			
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)			
Variances	Variance	Ratio F		2.53603	23,15450	0.38939		Equal Variances			
Distribution	Shapiro-			0.92698		0.41889		Normal Distribution	on		
Data Summ	агу			Origin	nal Data			Transf	formed D	Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maxi	mum	SD
0	Artificial Soll/S	5	45.68	36.7	55.8	7.5344					
100		5	47.36	36	64	11,998					
Average Height (mm)					Cantonad	20 15- 10 10 5- 5- -10	•/	<i>,</i> •	•/	•/	
0						-15	-	1		1-	
•	0		100			-2.0	-1.5 -1	.0 -0.5 0.0 0	.5 1.0	1.5	2.0

**CETIS Analysis Detail** 

Comparisons:

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Report Date:

18 Jul-06 3:05 PM

Analysis:

01-3057-6016/B154206psB

Endpoint		Anal	ysis Type		Sample Li	nk Contr	ol Link	Date Analyzed	Ve	rsion	
Average Ler	ngth (mm)		parison		16-3653-47		53-4731	18 Jul-06 3:05		TISV1	.1.2
Method		Alt I	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD
	ce t Two-Sample	C>		nsformed		100	>100	1	N/A		24.52%
Group Com	parisons										
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil	Sedi 100		1.02703	1.85955	0.1672	30.563		Non-Significant E	ffect		
ANOVA Tab	le										
Source	Sum of	Sauares	Mean Squ	are DF	F Statistic	c P-Valu		Decision(0.05)			
Between	712.336		712.336	1	1.05	0.3344		Non-Significant B	ffect		
Error	5402.64		675.33	8							
Total	6114.975		1387.666	9	_						
ANOVA Ass	umptions										
ANOVA Ass				Otation.	0.1111	D.V. 1		D1-1(0.04)			
Attribute	Test	Delia F		Statistic	Critical	P-Valu		Decision(0.01)			
Variances	Variance			1.42363	23.15450			Equal Variances Normal Distribut			
Distribution	Shapiro-	WIIK W		0.96884	· ·	0.8798	0	NOTHER DISTIBUTE	UII		
Data Summ	ary			Origin	nal Data			Trans	formed D	ata	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n · Minimur	n Maxi	mum	SD
0	Artificial Soil/S	5	124.62	89.8	153.2	28.167					
100		5	107.74	87.6	148	23.607					
Average Length (mm)						Untransformed 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.			,,	ø	-
0	0	Conc-°	. 10	0		-10- -20- -30- -40- -2.0	-1.5	-1.0 -0.5 0.0 Rankits	0.5 1.0	1.5	2.0

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Report Date:

18 Jul-06 3:05 PM

Analysis:

09-4937-3263/B154206psB

Endpoint		Anal	lysis Type		Sample Li	nk Contro	t Link	Date Analyzed	Version	
	Wt (Wet, mg)		parlson	14.074	16-3653-47			18 Jul-06 3:05 PM	A CETISV	1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Varian	ce t Two-Sample	C > .	T Untrar	sformed		100	>100	1	N/A	44.89%
Group Com	parisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil	Sedi 100		0.22571	1.85955	0.4135	28.689		Non-Significant Eff	ect	
ANOVA Tab	le			***************************************						
Source	Sum of S	Squares	Mean Squa	are DF	F Statisti	c P-Value		Decision(0.05)		
Between	30.31542		30.31542	1	0.05	0.82709		Non-Significant Eff	ect	
Error	4760.421	1	595.0527	8						
Total	4790.736	580	625.36809	9	_					
ANOVA Ass	umptions								,	
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		3.68029	23.15450	0.23489		Equal Variances		
Distribution	Shapiro-	Wilk W		0.89548		0.19531		Normal Distribution	)	
Data Summ	агу			Origi	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	63.903	41.475	82.338	15.946				
100		5	60.421	36.58	110.67	30.591				
Graphics										
17						60-3		1		
Average AG Wt (Wet, mg)						50			•	,
19 1						8 40		i	/	
5 1						Centered Untransformed		į		
M 1						Sur 20-		1	/	
A 1-						2 =		1	· ·	
E 0-						5 10-j		10	•	
¥ 0		•				0]				
0.3						-10		16 0		
0						-20-		/		
9						-30	. /	•		
0 .	0		100	0		-2.0	-1.5 -	1.0 -0.5 0.0 0.5	1.0 1.5	2.0
		Conc-	%					Rankits		

**CETIS Analysis Detail** 

Comparisons:

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Report Date:

18 Jul-06 3:05 PM 17-9077-0135/B154206psB

	_		٠.	•	-	
Δ	n	al	ure	ei		

Plant Bioassay - Chronic			CH2M Hill

Endpoint	Analysis	s Type	Sample L	ink Co	ntrol Link	Date Analyzed	1	/ersion
Average AG Wt (Dry, mg)	Compar	ison	16-3653-4	731 16-	3653-4731	18 Jul-06 3:05	PM C	ETISv1.1.2
Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C>T	Untransformed		100	>100	1	N/A	33.63%

#### **Group Comparisons**

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)	
Artificial So	il/Sedi	100	1.53523	1.85955	0.0816	4.15398	Non-Significant Effect	

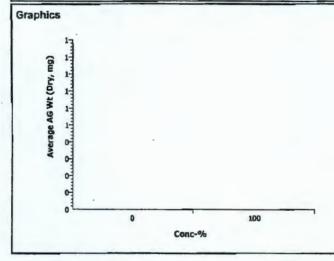
#### **ANOVA Table**

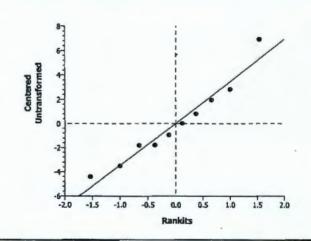
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)	
Between	29.40357	29.40357	1	2.36	0.16328	Non-Significant Effect	
Error	99.80294	12.47537	8				
Total	129.206511	41.878938	9	_			

#### **ANOVA Assumptions**

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	
Variances	Variance Ratio F	10.51840	23.15450	0.04261	Equal Variances	
Distribution	Shapiro-Wilk W	0.95529		0.73115	Normal Distribution	

Data Sumn	Data Summary			Origin	nal Data		Transformed Data				
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD	
0	Artificial Soil/S	5	12.351	7.9275	19.276	4,7733					
100		5	8.9213	7.106	10.867	1.4718					





Comparisons:

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Report Date:

18 Jul-06 3:05 PM

Analysis:

10-4892-3286/B154206psB

		Anal	ysis Type		Sample Lin	k Contro	Link	Date Analyzed	Version	
Endpoint Average Root	Wt. (Wet, mg)		parison		16-3653-47			18 Jul-06 3:05 PM		.1.2
Method		Alt I	H Data T	ransform	Zeta	NOEL I	LOEL	Toxic Units	ChV	PMSD
	e t Two-Sample	C > 1		sformed			>100		N/A	37.75%
Group Comp	parisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S			1.24804	1.85955	0.1237	42.7472		Non-Significant Effe	ect	
ANOVA Table							-			
Source		Squares	Mean Squa	re DF	F Statistic	P-Value		Decision(0.05)		
Between	2057.75		2057.758	1	1.56	0.24731		Non-Significant Effe	ect	
Error	10568.9		1321.115	8						
Total	12626.6	821	3378.8738	9	_					
ANOVA Assu	imptions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	ariances Variance Ratio F			6.72930	23.15450	0.09177		Equal Variances		
Distribution Shapiro-Wilk W				0.94554		0.61618		Normal Distribution		
Data Summa	ary			Origi	nal Data			Transfo	rmed Data	
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial Soil/S	5	113.23	51.638	158.52	47.962				
100		5	84.544	64.510	103.88	18.489				
Average Root W.L. (Wet, mg)						40 20 20 20 20 20 20 20 20 20 20 20 20 20		.,	/.	
0						-60-		i		

Approval:

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Report Date:

18 Jul-06 3:05 PM

Analysis:

13-4344-1355/B154206psB

JE 113 A	lialysis De	lali						Analysis:	13-4344-135	5/B154206ps		
Plant Bioass	ay - Chronic									CH2M Hi		
Endpoint		Anal	ysis Type		Sample Li		ol Link	Date Analyzed	Version			
Average Roo	Wt. (Dry, mg)	Com	parison		16-3653-47	31 16-365	3-4731	Link Date Analyzed Version  4731 18 Jul-06 3:05 PM CETISv1.1.2  DEL Toxic Units ChV PMSD  00 1 N/A 45.34%  Decision(0.05)  Non-Significant Effect  Decision(0.05)  Non-Significant Effect				
Method		Alt I	H Data	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD		
Equal Variand	ce t Two-Sample	C>.	T Untrar	sformed		100	>100	1	N/A	45.34%		
Group Comp	parisons											
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)				
Artificial Soil/	Sedl 100		1.42859	1.85955	0.0955	3.56658		Non-Significant Eff	ect			
ANOVA Tabl	9											
Source	Sum of	Squares	Mean Squ	are DF	F Statistic	P-Value		Decision(0.05)				
Between	18.7690	4	18.76904	1	2.04	0.19098			ect			
Error	73.573		9.196625	8								
Total	92.3420	410	27.965668	9								
ANOVA Assu	ımptions											
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)				
Variances	Variance	Ratio F		16.97948	23.15450	0.01787		Equal Variances				
Distribution	Shapiro-	Wilk W		0.90304		0.23651		Normal Distribution	1			
Data Summa	ıry			Origi	nal Data			Transfo	rmed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD		
0	Artificial Soil/S	5	7.8666	3.78	14.108	4.1678						
100		5	5.1266	3.9520	6.24	1.0114						
4 Verage Root Wt. (Dry, mg) 1.0. (Dr						Untransformed Value of Value o		به معرف	<i>.</i>			
0.2						4	0/	•				
0.1	3					4	9	i				

0.5 1.0 1.5 2.0

Rankits

000-092-101-1

100

Conc-%

Comparisons:

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Report Date:

18 Jul-06 3:05 PM

Analysis:

07-1360-0140/B154206psB

Endpoint		Anah	sis Type		Sample Li	nk Cont	rol Link	Date Analyzed	Version	n
	Wt (Wet, mg)		parison		16-3653-47		553-4731	18 Jul-06 3:05 F		
Method			Alt H Data Transform		Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
	e t Two-Sample	C>T		sformed	Lota	100	>100	1	N/A	34.83%
										-
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		0.96975	1.85955	0.1803	61.691	3	Non-Significant E	ffect	
ANOVA Table										
Source		Squares	Mean Squa	are DF	F Statistic	P-Valu	10	Decision(0.05)		
Between	2587.601		2587.601	1	0.94	0.3605		Non-Significant E	ffect	
Ептог	22012.2		2751.524	8		0.0000		organicalit E		
Total	24599.79		5339.1252		_					
ANOVA A-										
ANOVA Assu										
Attribute	Test	D # 5		Statistic	Critical	P-Valu		Decision(0.01)		
Variances	Variance			1.61984	23.15450	0.6517		Equal Variances		
Distribution	Shapiro-	Wilk W		0.94404		0.5987	6	Normal Distribution	on	
Data Summa	гу			Origin	nal Data			Transf	formed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial Soil/S	5	177.14	93.113	240.86	58.331				
100		5	144.97	101.89	208.61	45.832				
Average Total Wt (Wet, mg) splitter (Wet, mg)					,	Contracted			/.	
-1-0	0	Conc-%	100	)		-100 -2	0 -1.5	-1.0 -0.5 0.0 (	0.5 1.0 1.5	2.0

Comparisons:

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Report Date:

18 Jul-06 3:05 PM

Analysis:

06-4394-4993/B154206psB

Endpoint		Anal	ysis Type		Sample Lie	nk Conti	rol Link	Date Analyzed	Version	n
Average Total	Wt (Dry, mg)		parison		16-3653-47	4731 16-3653-4731 18 Jul-06 3:05 PM CETISv1.    NOEL LOEL Toxic Units ChV   100 >100 1 N/A				
Method		Alt I	H Data 7	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Varianc	e t Two-Sample	C > 1	T Untrar	sformed		100	>100	1	N/A	37.33%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S			1.52026	1.85955	0.0835	7.5463	7	Non-Significant E	ffect	
ANOVA Table										
Source	Sum of S	Sauares	Mean Squa	are DF	F Statistic	P-Valu	A	Decision(0.05)		
Between	95,15679		95.15679	1	2.31	0.1669		Non-Significant E	ffect	
Error	329.3759		41,17199	8						
Total	424.5326		136.32878	9	_					
ANOVA Assu	mptions								1	
Attribute	Test			Statistic	Critical	P-Valu	.0	Decision(0.01)		
Variances	Variance	Ratio F		16.52981	23.15450	0.0187	8	Equal Variances		
Distribution	Shapiro-	Wilk W	******	0.91804		0.3408	9	Normal Distribution	on	
Data Summa	гу			Origin	nal Data			Trans	formed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimun	Maximur	n SD
0	Artificial Soil/S	5	20.217	12.223	33.384	8.8117				
100		5	14.048	11.058	15.850	2.1673		•		
Average Total Wt (Dry, mg)		•				Untransformed 12		• • • •	/.	
0	0	Conc-9	100	)		-10	-1.5	-1.0 -0.5 0.0 Rankits	0.5 1.0 1.5	5 2.0

hials:	Day 0 3~	DBy 12 NJ	Day 14 _ Dr	Day 16N	1(	Day 21 _	(Na)	Day 20 B			
			Samp	ale ID: E287	7701-	SOI2		3 154	2- 0	7	
	:		#	seeds germ	inate	d A	عاتله				pH
CONC.	REPLICATE	PRE-EMERGENCE (12 days after planting)	@ EMERGENCE (14 days after planting)	planting)	noc.	EME V21 d			CE er	INITIAL (@ planting)	. FINAL (28 days after planting)
,	A	5	5	5	5	5	5	4			
100%  B 3 5											
	С	1	1	1	1	1		ン		6.7	6.0
	D		4	6	7	7	675	5			
	E	14	5	5	5	5	3	3			
s Post-Emer	nence: Selective	v thin down to 5 Seed	inos deave the 5 tale	est seedlings).	Des	cribe sh	not annears	sca:			
	- 1			1	WI	~	L	. /	+ 1	smell 2	shorts even
	5 medo.	m in sud	0	( some	11 1	× ×	ul sto	se -	mo	Il stat	remark
eplicate C	1 melio	m + 1 5	mall in	Soud	rhy	re	V			1	
aplicate D	4 meto.	un + 2 5m	all in a	ad shy	pe	+1	Sny	11 dere	-	I smull a	pub shipe remo
eplicate E	3 meds	um in sa	& shape	_		1 2	6 5	tents			0
		0					,				
	rgence: Describe	1 1	11 11	200 .		10					
	· II .	m & 1 sm	all frank		500		rape				
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	3 mg	dime of	44000	-			- 70	7	_		
	2 11-	pu.			-						T # al Shoot
	ight		1111			- 1	"				11 14 10
ve ground)			1/2			-		110		2 3	12 12 1 :-
			110	1-4		-4	_				13 .1 6 7
			-			-		CIA		UC"	it 1011
			1.0	-		-					1
		Replicate E						1	mm	m	10,11,11
	iight;		-								
va ground)						1		1			
			101.00			_					
			100 1110					1			
			905 77								
		Replicate E	795.12	1243.	5	104	La 75				•
escribe rool a	ppearance:										
Replicate A											
Replicate B											
Replicate C	41 1	**			_						
Replicate O	"SUSHY	Many	braches								
Replicate E											
sure Root Len	gth:		1st Seedling	2nd Seedl	ling		Seedling	4th Seedli	79	5th Seedling	
gest root)		'Replicate A	110 mm		mm		37 mm	40	mm	m	m.
		Replicate B	75 mm		mm	-	D mm	101	mm	45 m	m
		Replicate C	91 mm		mm		mm		mm	m	m
		Replicate D	81 mm		mm	9	5 mm	65	mm	45 m	m
		Replicate E	103 mm	95	mm	11	S mm		mm	m	m
on Deaths			The Year late in the	144-148-1			4n /	1			
sure Root Wel	gnc	Bearing a	1013.67	1919.			WI. (mg)	1			
gest root)		Replicate A	968.36		_		10 -				
		Replicate B		1456		1001	010	1			
		Replicate C	1006.99	1716.	-	1.0	1.36				
		Replicate D	IIIII AM	1 11 10	-	11010		1			
		Replicate E	900 27	1346.7	•	-	2.16				

TAY Comments:

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**CETIS Test Summary** 

Report Date:

18 Jul-06 3:18 PM

Test Link:

04-8263-2299/B154207psB

Plant Bioassa	y - Chronic					CH2M Hill
Test No: Start Date: Ending Date:	25 Jan-06 F		Plant Chronic ASTM E1963-02 (2002	2)	Duration: Species: Source:	N/A Poa sandbergii
Setup Date:	25 Jan-06 E	rine:				
Comments:	recalculated Height and Le	ngth data J	uly 18, 2006			
Sample No:	05-1608-3151	ode:	B1542-07		Client:	
Sample Date:	21 Nov-05	laterial:	Soil		Project:	
Receive Date:	5	iource:	Hanford			
Sample Age:	65d 0h S	itation:				
Comments:	J10DV0, E287701					
Comparison S	Summary					
Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
07-1683-8343	% Germination	100	> 100	N/A	29.15%	Equal Variance t Two-Sample
05-9865-5166	Average Height (mm)	100	> 100	N/A	21.86%	Equal Variance t Two-Sample
11-1712-0855	Average Length (mm)	< 100	100	N/A	21.06%	Equal Variance t Two-Sample
14-2807-8527	Average AG Wt (Wet, mg)	100	> 100	N/A	48.02%	Equal Variance t Two-Sample
07-3121-1221	Average AG Wt (Dry, mg)	100	> 100	N/A	40.28%	Equal Variance t Two-Sample
01-1999-8693	Average Root Wt. (Wet, m	g 100	> 100	N/A	61.63%	Equal Variance t Two-Sample
11-1044-3638	Average Root Wt. (Dry, mg	) 100	> 100	N/A	55.59%	Equal Variance t Two-Sample
10-3674-4783	Average Total Wt (Wet, m	g 100	> 100	N/A	55.04%	Equal Variance t Two-Sample
09-9540-8099	Average Total Wt (Dry, mg	) 100	> 100	N/A	45.41%	Equal Variance t Two-Sample

**CETIS Test Summary** 

Report Date: Test Link: 18 Jul-06 3:18 PM 04-8263-2299/B154207psB

% Germina	tion Summary							
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.76000	0.40000	1.00000	0.11662	0.26077	34.31%
Average H	eight (mm) Summ	ary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	45.68	36.700	55.8	3.3695	7.5344	16.49%
100		5	41.47	28.5	54	4.1819	9.3510	22.55%
Average Le	ength (mm) Sumn	nary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	124.62	89.800	153,2	12.597	28.167	22.60%
100		5	80.92	64	102.7	6.3638	14,23	17.59%
Average AC	Wt (Wet, mg) Si	ımmary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	63.903	41.475	82.338	7.1313	15.946	24.95%
100		5	76.856	32.385	123.58	14.88	33.272	43.29%
Average AC	Wt (Dry, mg) Su	mmary						
Сопс-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	12.351	7.9275	19.276	2.1347	4.7733	38.65%
100		5	14.659	10.595	19.105	1.6121	3.6047	24.59%
Average Ro	oot Wt. (Wet, mg)	Summa	ry					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	113.23	51.638	158.52	21.449	47.962	42.36%
100		5	123.91	37.985	226.38	30.793	68.855	55.57%
Average Ro	oot Wt. (Dry, mg) \$	Summar	у					
Сопс-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soil/S	5	7.8666	3.78	14.108	1.8639	4.1678	52.98%
100		5	9.1010	6.465	13.887	1.4338	3.2061	35.23%
Average To	otal Wt (Wet, mg)	Summa	ry			~		,
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	177.14	93.113	240.86	26.086	58.331	32.93%
100		5	200.76	70.37	349.96	45.485	101.71	50.66%
Average To	otal Wt (Dry, mg) S	ummary	,		,			
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	20.217	12,223	33.384	3.9407	8.8117	43.58%
100		5	23.76	17.060	32.992	2.9736	6.6492	27.98%

Report Date:

18 Jul-06 3:18 PM

Test Link:

04-8263-2299/B154207psB

tion Detail					
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
	0.80000	1,00000	0.40000	1.00000	0.60000
eight (mm) Detail					
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	50.6	41.8	55.8	36.7000	43.5
	43.25	37.6	28.5	44	54
ength (mm) Detail					
		Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	138.800	142	153.2	99.3000	89.8000
	84.3000	75.4000	64	78.2	102,7
Wt (Wet, mg) Do	etail				
		Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	67.2900	55.1900	82.338	73.2233	41.4750
1,000	123.580	62.9080	32.3850	81.212	84.1934
Wt (Dry, mg) De	tail				
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751
	19.105	11.344	10.5950	16.5740	15.6767
oot Wt. (Wet, mg)	Detail				
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
	226.382	97.668	37.985	141.882	115.61
oot Wt. (Dry, mg) I	Detail				
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4.295
	13.8875	6.68201	6.465	10.874	7.59666
otal Wt (Wet, mg)					
		Rep 2	Rep 3	Rep 4	Rep 5
		195.814	240.862	145.247	93.1125
	349.963	160,576	70.37	223.094	199.803
otal Wt (Drv. mg) I	Detail				
		Ren 2	Ren 3	Ren 4	Rep 5
Artificial Soil/S		18.946	33.384	12.6066	12.2225
			30.004	12.0000	I M. SALEV
	Control Type Artificial Soil/S  eight (mm) Detail Control Type Artificial Soil/S  ength (mm) Detail Control Type Artificial Soil/S  Wt (Wet, mg) De Control Type Artificial Soil/S  Wt (Dry, mg) De Control Type Artificial Soil/S  oot Wt. (Wet, mg) Control Type Artificial Soil/S  oot Wt. (Dry, mg) I Control Type Artificial Soil/S  oot Wt. (Dry, mg) I Control Type Artificial Soil/S  oot Wt. (Dry, mg) I Control Type Artificial Soil/S  otal Wt (Wet, mg) Control Type Artificial Soil/S  otal Wt (Wet, mg) Control Type Artificial Soil/S	Control Type Rep 1 Artificial Soil/S 1.00000 0.80000  eight (mm) Detail Control Type Rep 1 Artificial Soil/S 50.6 43.25  ength (mm) Detail Control Type Rep 1 Artificial Soil/S 138.800 84.300	Control Type	Control Type	Control Type

**CETIS Test Summary** 

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Report Date:

18 Jul-06 3:14 PM

Analysis:

07-1683-8343/B154207psB

<b>CETIS Analy</b>	sis Det	ai
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0.54909750

0.1068173

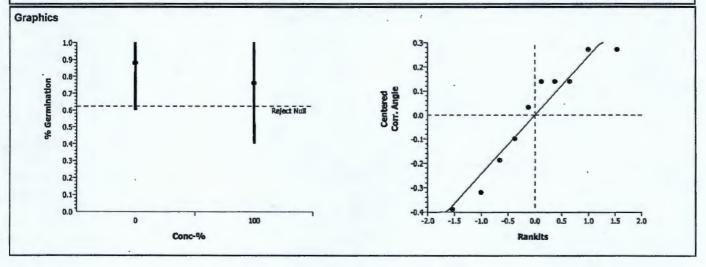
Total

Plant Bioassay - C	hronic									CH2M Hill
Endpoint		Analys	is Type		Sample Li	nk Cor	trol Link	Date Analyzed	1	Version
% Germination		Compa	rison		04-8263-22	299 04-8	3263-2299	18 Jul-06 3:14	PM (	CETISv1.1.2
Method		Alt H	Data Tra	nsform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Tv	vo-Sample	C>T	Angular	(Corrected)		100	>100	1	N/A	29.15%
Group Compariso	ns									
Control vs	Conc-%	S	tatistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soll/Sedi	100	0	.83103	1.85955	0.2150	0.295	62	Non-Significant I	Effect	
ANOVA Table										
Source	Sum of Squa	res N	lean Square	DF	F Statisti	c P-Va	lue	Decision(0.05)		
Between	0.0436344	0	.043634	1	0.69	0.430	006	Non-Significant I	Effect	
Error	0.5054631	0	.063183	8						

ANOVA Assum	ptions					
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)	
Variances	Variance Ratio F	1.96770	23.15450	0.52822	Equal Variances	
Distribution	Shapiro-Wilk W	0.90703		0.26121	Normal Distribution	

9

Data Summary				Origin	nal Data			Transfo	rmed Data					
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD				
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.17889	1.20581	0.88608	1.34528	0.20635				
100		5	0.76000	0.40000	1.00000	0.26077	1.07370	0.68472	1.34528	0.28946				



Comparisons:

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Report Date:

18 Jul-06 3:18 PM

Analysis:

05-9865-5166/B154207psB

ysis Det							Analysis:	50 5000 5100	S/B154207ps
Chronic					1				CH2M Hil
	Anai	lysis Type		Sample Lin	nk Contro	Link	Date Analyzed		
nm)	Com	parison		04-8263-22	99 04-8263	3-2299	18 Jul-06 3:18 PM	A CETISVI	.1.2
	Alt	H Data T	ransform	Zeta	NOEL I	OEL	Toxic Units	ChV	PMSD
wo-Sample	C>	T Untran	sformed		100	100	1	N/A	21.86%
ons									
Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
100		0.78392	1.85955	0.2278	9.98662		Non-Significant Eff	ect	
Sum of S	Squares	Mean Squa	are DF	F Statistic	P-Value		Decision(0.05)		
		44.31025	1	0.61	0.45567			ect	
576.836		72.1045	8						
621.1462	:44	116.41475	9						
ions								-	
Test			Statistic	Critical	P-Value		Decision(0.01)		
Variance	Ratio F		1.54037	23.15450	0.68574		Equal Variances		
Shapiro-\	Wilk W		0.97736		0.94947		Normal Distribution	1	
			Origin	nal Data			Transfo	rmed Data	
ntrol Type	Count	Mean	Minimum	Maximum	SD	Mear	Minimum	Maximum	SD
ificial Soil/S	5 .	45.68	36.7	55.8	7.5344				
	5	41.47	28.5	54	9.3510				
					157		1	/	
		- 1					ł	./	
1									
		+		3	BE 5			6	
!			Dalact Mull		a sta				
			victory unit	ě	35 0				
					5		6		
	Sum of \$ 44.31025 576.836 621.1462 ions Test Variance	Analonm) Com Alt wo-Sample C > ons Conc-% 100  Sum of Squares 44.31025 576.836 621.146244 ions Test Variance Ratio F Shapiro-Wilk W  Introl Type Count ificial Soil/S 5	Analysis Type Comparison  Alt H Data T wo-Sample C > T Untran  Conc-% Statistic 100 0.78392  Sum of Squares Mean Squa 44.31025 44.31025 576.836 72.1045 621.146244 116.41475  ions Test Variance Ratio F Shapiro-Wilk W  Introl Type Count Mean ificial Soil/S 5 45.68	Analysis Type    Comparison	Analysis Type	Analysis Type	Analysis Type	Chronic   Analysis Type	Analysis Type

100

Conc-%

0.5 1.0 1.5 2.0

0.0 Rankits

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Report Date:

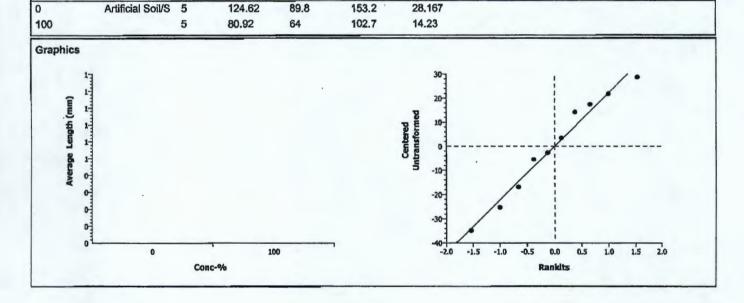
18 Jul-06 3:14 PM

Analysis:

11-1712-0855/B154207psB

## **CETIS Analysis Detail**

Plant Bioassay -	Chronic									CH2M Hi
Endpoint		Ana	lysis Type		Sample Li	nk Contro	Link	Date Analyzed	Version	
Average Length	(mm)	Corr	parison		04-8263-2	299 04-826	3-2299	18 Jul-06 3:14 PM	CETISv1	.1.2
Method		Alt	H Data	Transform	Zeta	NOEL 1	LOEL	Toxic Units C	hV	PMSD
Equal Variance t	Two-Sample	C>	T Untrar	nsformed		<100	100	N	I/A	21.06%
Group Comparis	sons									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soll/Sedi	100		3.09648	1.85955	0.0074	26.2435		Significant Effect		
ANOVA Table										
Source	Sum of	Squares	Mean Squ	are DF	F Statisti	c P-Value		Decision(0.05)		
Between	4774.22	5	4774.225	1	9.59	0.01474		Significant Effect		
Error	3983.436	6	497.9294	8						
Total	8757.666	064	5272.1545	9						
ANOVA Assump	tions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		3.91814	23.15450	0.21443		Equal Variances		
Distribution	Shapiro-	Wilk W		0.96138		0.80147		Normal Distribution		
Data Summary				Origi	nal Data			Transfor	med Data	
Conc-% Co	ontrol Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
			40.4.00		1000					



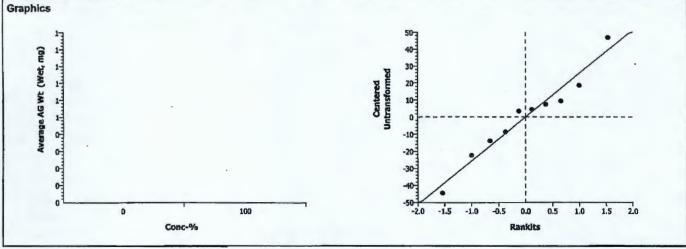
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Report Date:

18 Jul-06 3:14 PM 14-2807-8527/B154207psB

## **CETIS Analysis Detail**

Plant Bioassay - C	Chronic									CH2M H
Endpoint		Ana	lysis Type		Sample Li	nk Control	Link	Date Analyzed	Version	
Average AG Wt (V	Vet, mg)	Con	nparison		04-8263-22	99 04-8263	3-2299	18 Jul-06 3:14 Pi	M CETISv1	.1.2
Method		Alt	H Data T	ransform	Zeta	NOEL L	OEL	Toxic Units	ChV	PMSD
Equal Variance t To	wo-Sample	C>	T Untran	sformed		100 >	100	1	N/A	48.02%
Group Compariso	ns									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sedi	100		-0.785	1.85955	0.7725	30.6833	1	Non-Significant Ef	fect	
ANOVA Table										
Source	Sum of S	Squares	Mean Squa	re DF	F Statistic	P-Value	1	Decision(0.05)		
Between	419,4125		419.4125	1	0.62	0.45508	1	Non-Significant Ef	fect	
Ептог	5445.28		680.66	8						
Total	5864.692	29	1100.0725	9						
ANOVA Assumpti	ons				•			×		
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		4.35362	23.15450	0.18327		Equal Variances		
Distribution	Shapiro-	Wilk W		0.97222		0.91060		Normal Distributio	n	
Data Summary				Origi	nal Data			Transfe	ormed Data	
Conc-% Con	ntrol Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0 Arti	ficial Soil/S	5	63.903	41.475	82.338	15.946				
100		5	76.856	32.385	123.58	33.272				



Comparisons:

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Report Date:

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Analysis:

07-3121-1221/B154207psB

Plant Bioassay - Chro	nic										СН2М Н
Endpoint		Analysis			Sample Lir		trol Link	Date Analyzed		Version	
Average AG Wt (Dry, n	ng)	Compari	son		04-8263-22	99 04-8	263-2299	18 Jul-06 3:14 F	PM	CETISv1.1.2	
Method		Alt H	Data Trai	nsform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD.
Equal Variance t Two-S	Sample	C>T	Untransfo	ormed		100	>100	1	N/A		40.28%
Group Comparisons											
Control vs C	onc-%	Sta	atistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil/Sedi 1	00	-0.	8628	1.85955	0.7933	4.9743	30	Non-Significant E	ffect		
ANOVA Table			-								
	Sum of Squa	res Me	an Square	DF	F Statistic	P-Valu	Je	Decision(0.05)			
	3.31844		.31844	1	0.74	0.4133		Non-Significant E	ffect		
	43.1132		.88915	8							
	56.431646	31	.207592	9	-						
ANOVA Assumptions											
	Test		St	atistic	Critical	P-Val	пе	Decision(0.01)			
/ariances Variance Ratio I		o F	: 1.	75351	23.15450	0.599	77	Equal Variances			
Distribution S	Shapiro-Wilk	W	0.9	91217		0.2962	21	Normal Distributi	on		
Data Summary				Origin	nal Data			Trans	forme	d Data	
Conc-% Contro	Type Co	unt Me	ean 1	Minimum	Maximum	SD	Mea	n Minimun	n Ma	aximum	SD
0 Artificia	Soil/S 5	12		7.9275	19,276	4.7733					
100	5 ·	14	.659	10.595	19.105	3.6047					
Average AG Wr (Dry, mg) O O O O O O O O O O O O O O O O O O O						Untransformed 5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	• /	.,	,	/	
اه	0	.' Conc-%	100	1		-2.0	-1.5 -	1.0 -0.5 0.0 0 Rankits	0.5 1	0 1,5	2.0

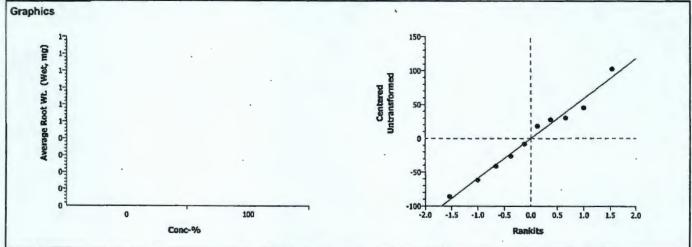
Comparisons:

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Report Date: Analysis:

01-1999-8693/B154207psB

Endpoint		Ana	lysis Type		Sample Li	nk Contro	Llink	Date Analyzed	Version	
Average Root Wt.	(Wet. mg)		nparison		04-8263-22			18 Jul-06 3:14 P		.1.2
	(1104)97				TI TI					
Method		Alt		ransform	Zeta		LOEL	Toxic Units	ChV	PMSD
Equal Variance t T	wo-Sample	C>	T Untrar	nsformed		100	>100	1	N/A	61.63%
Group Compariso	ons									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sedi	100		-0.2844	1.85955	0.6083	69.7836		Non-Significant Ef	fect	
ANOVA Table				,						
Source	Sum of S	Sauares	Mean Squa	are DF	F Statistic	P-Value		Decision(0.05)		
Between	284.6931		284.6931	1	0.08	0.78335		Non-Significant Ef	fect	
Error	28165.79	)	3520.723	8						
Total	28450.47	82	3805.4162	9						
ANOVA Assumpti	ions .									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		2.06099	23.15450	0.50090		Equal Variances		
Distribution	Shapiro-	Wilk W		0.98045		0.96755		Normal Distributio	n	
Data Summary				Orig	inal Data			Transf	ormed Data	
Conc-% Con	ntrol Type	Count	Mean	Minimum	Maximum	SD	Mear	Minimum	Maximum	SD
	ificial Soil/S	5	113.23	51.638	158.52	47.962				
		5	123.91	37.985	226.38	68.855				



Comparisons:

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Report Date:

18 Jul-06 3:14 PM

report bate.	10 001 00 0.171 1
Analysis:	11-1044-3638/B154207psE

hronic									СН2М Н
									OHEM H
		ysis Type		Sample Lin			Date Analyzed	Version	
Dry, mg)	Com	parison		04-8263-22	99 04-826	3-2299	18 Jul-06 3:14 Pl	M CETISV1	.1.2
	Alt I	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
vo-Sample	C>.	T Untrai	nsformed		100	>100	1	N/A	55.59%
пѕ									
Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
100		-0.5249	1.85955	0.6931	4.37287		Non-Significant Ef	fect	
			Mineral Residence						
Sum of Se	quares	Mean Squ	are DF	F Statistic	P-Value		Decision(0.05)		
3.809574		3.809574	, 1	0.28	0.61386		Non-Significant Ef	fect	
110.5981		13.82476	8						
114.40768	31	17.634337	9						
ons		-							
Test			Statistic	Critical	· P-Value		Decision(0.01)		
Variance F	Ratio F		1.68983	23.15450	0.62375		Equal Variances		
Shapiro-W	ilk W		0.92375		0.38925		Normal Distribution	n	
			Orlgi	nal Data			Transfe	ormed Data	
trol Type	Count	Mean	Minimum	Maximum	SD	Mear	Minimum .	Maximum	SD
icial Soll/S	5	7.8666	3.78	14.108	4.1678				
	5	9.1010	6.465	13.888	3.2061				
					Untransformed			·/	
֡֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜	Sum of Se 3.809574 110.5981 114.40768 cons Test Variance F Shapiro-W	vo-Sample C > ' ns Conc-% 100  Sum of Squares 3.809574 110.5981 114.407681  ons Test Variance Ratio F Shapiro-Wilk W	Conc-%   Statistic	Conc-%   Statistic   Critical	Conc-%   Statistic   Critical   P-Value	No-Sample   C > T	100   >100   >100   >100   >100     >100   >100	No. Sample   C > T   Untransformed   100   >100   1	100   >100   1   N/A

0.5 1.0

Rankits

Approval:

100

Conc-%

0.1

Comparisons:

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Report Date:

18 Jul-06 3:14 PM

Analysis: 10-3674-4783/B154207psB

Plant Bioass	ay - Chronic									CH2M H
Endpoint		Anal	ysis Type		Sample Li	nk Contro	ol Link	Date Analyzed	Version	
Average Total	Wt (Wet, mg)	Com	parison		04-8263-22	99 04-826	3-2299	18 Jul-06 3:14 Pt	M CETISV	1.1.2
Method		Alt I	H Data T	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	æ t Two-Sample	C>.	T Untran	sformed		100	>100	1	N/A	55.04%
Group Comp	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		-0.4505	1.85955	0.6679	97.5044		Non-Significant Eff	ect	
ANOVA Table	9									
Source	Sum of	Squares	Mean Squa	re DF	F Statistic	P-Value	•	Decision(0.05)		
Between	1395.204	4	1395.204	1	0.20	0.66428		Non-Significant Eff	fect	-
Error	54987.49		6873.436	8				-		
Total	56382.69	920	8268.6398	9	-					
ANOVA Assu	mptions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		3.04021	23.15450	0.30692		Equal Variances		
Distribution	Shapiro-	Wilk W		0.98099		0.97023		Normal Distribution	1	
Data Summa	ry			Origin	nal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mear	Minimum	Maximum	SD
0	Artificial Soil/S	5	177.14	93.113	240.86	58.331				
100		5	200.76	70.37	349.96	101.71				
Graphics						150			/	,
Average Total W.t. (Wet, mg)					į	Untransformed		9/6	<u>/•</u>	
- 4						-50-		/		
0-3						-100-	,	~		

Rankits

0.5 1.0 1.5 2.0

100

Conc-%

Comparisons:

Page 9 of 9

Report Date: Analysis: 18 Jul-06 3:14 PM 09-9540-8099/B154207psB

Traile Dioasse	ay - Chronic									CH2M H
Endpoint			ysis Type		Sample Li		ol Link	Date Analyzed	Version	
Average Total	Wt (Dry, mg)	Com	parison		04-8263-22	99 04-826	33-2299	18 Jul-06 3:14 PM	CETISV1	1.1.2
Method		Alt I	H Data	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variano	e t Two-Sample	C>.	Γ Untrar	sformed		100	>100	1	N/A	45.41%
Group Compa	arisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soll/S	Sedi 100		-0.7176	1.85955	0.7533	9.18014		Non-Significant Effe	ect	
ANOVA Table	)					•				
Source	Sum of S	Squares	Mean Squ	are DF	F Statistic	P-Value	•	Decision(0.05)		
Between	31.37398	3	31.37398	1	0.51	0.49343	3	Non-Significant Effe	ect	
Error	487.4312	2	60.9289	8						
Total	518.8051	197	92.302885	9	_		٠			
ANOVA Assur Attribute Variances Distribution	Test Variance Shapiro-			Statistic 1.75627 0.91351	Critical 23.15450	P-Value 0.59876 0.30596	3	Decision(0.01) Equal Variances Normal Distribution		
Data Summa					nal Data				rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0 100	Artificial Soil/S	5	20.217	12.223 17.060	33.384 32.992	8.8117 6.6491				
Average Total Wt (Dry, mg)				:		Centered Untransformed			,/	/

1.0 1.5 2.0

0.5

Ranklis

100

Conc-%

		Day 12 NJ	Samo	e ID: E289701-5	SOI2 3	1542-08		
				seeds germinated			P	Н
CONC.	REPLICATE	PRE-EMERGENCE (12 days after plenting)		POST- EMERGENCE (16 days after	7-DAYS POST- EMERGENCE Of days after 23 planting) 30	14-DAYS POST- EMERGENCE (28 days after planting)	INITIAL (@ planting)	FINAL (28 days after planting)
	A	2	3	44	1 5			
100%	В	2	3	5 5	5 5		77	. 6
	С	3	5	77	7 7-75		7.3	6.8
	D			24	4 3			
	E	. 4	4	4 4	7 7-75			
s Post-Erne	ronnes Calacthial	y thin down to 6 Seed	loos down the 5 talls	et capitions) Des	criba shoot sonescor	aca:		
eplicate A	3 meletin		shape + 2		Souning	1		
eplicate B	2 melesus	,	shape + 3		un plants -	0	derf du	t ormert
epitcate C	3 lune	+ 2 medium	- 0		soul dants		ablest de	t remused
aplicata D	1	m in coud &				man tunius	brave 3	brud lest +
aplicate E	2 1000	-	0			erout + T	browblent	plat remo
				9-				7
ys Post-Em	ergence: Describe							
aplicate A		Thegood sha	1 13-				mall brow	и
teplicate 8	Ismallin	good shap	e or Ismal	1 w/z bro	whing sha	ots 4 2 5ma	Ill brown	
aplicate C	~ .	& 2 medin	- all egree		ord shap			
taplicate D	Inediam	in good sha	pe , Zsma	Il; one wil	th 2 brown	tips on shoot	s Isma	I brown shoot
isplicate E		3 medium	- all gre	en qin g	ood shape			
ure Shoot He	elght:	M .	1st Seedling	2nd Seedling	3rd Seedling	4th Seedling	5th Seedling	# of shoo
e ground)		Replicate A	55,7 mm	mm	ma	mm	mir	
		Replicate B	240 th mm	mm	mm	mm	пкт	
		Replicate C	800 mm	mm	mm.	mm	ma	68
		Replicate D	570 mm	mm	mm	mm	ma	22
		Replicate E	980 pmm	mm	mm	mm	mr	24
ure Shoot W	eight:		Tin Tare Wt. (mg)	Wet Wt (mg)	Dry WL (mg)			
e ground)		Replicate A	986.95	1277.6	1038,96			
		Replicate B	978.08	1060.6	992,01			
		Replicate C	1013.99	1578.3	1095.87			
		Replicate D	976.55	1071.9	995,07			
		Replicate E	1012.66	1874.0	1108.04			
		Traphonio L	11012.00	.0110	7,00	,		
escribe root	appearance:							
escribe root Replicate A	appearance:							
	appearance:							
Replicate A	appearance:		•					
Replicate A Replicate B Replicate C Replicate D	appearance:		•					
Replicate A Replicate B	appearance:							
Replicate A Replicate B Replicate C Replicate D			1st Seedling	2nd Seedling	3rd Seedling	4th Seedling	5th Seedling	1
Replicate A Replicate B Replicate C Replicate D		Replicate A	1st Seedling	2nd Seedling mm			5th Seedling	
Replicate A Replicate B Replicate C Replicate D Replicate E sure Root Le		Replicate A	175 mm	mm	mm	mm		1
Replicate A Replicate B Replicate C Replicate D Replicate E sure Root Le			175 mm 175 mm	mm	. mm	mm mm	mi	n
Replicate A Replicate B Replicate C Replicate D Replicate E sure Root Le		Replicate B	175 mm (250 mm 178 mm	mm	mm · mm	mm mm	ma	1
Replicate A Replicate B Replicate C Replicate D Replicate E sure Root Le		Replicate B	175 mm	anm mm mca mm	mm - mm mm mm	mm mm mm	mn mn	n
Replicate A Replicate B Replicate C Replicate D Replicate E sure Rept Le est root)	ngth:	Replicate B  Replicate C  Replicate D	175 mm (250 mm 178 mm 122 mm	inm mm mm mm	1000 - 1000 mm 1000 mm 1000 mm	mm mm mm	ma ma	n
Replicate A Replicate B Replicate C Replicate D Replicate E Eure Root Le set root)	ngth:	Replicate B Replicate C Replicate D Replicate E	175 mm 150 mm 118 mm 122 mm 210 mm	mm mxn mxn mm	mm - min mm mm mm mm	mm mm mm	ma ma	n
Replicate A Replicate B Replicate C Replicate D Replicate E sure Rept Le est root)	ngth:	Replicate B Replicate C Replicate D Replicate E Replicate A	175 mm 150 mm 178 mm 122 mm 210 mm	mm mxn mm mm wei wi (mg)	Dry Wt. (mg)	mm mm mm	ma ma	n
Replicate A Replicate B Replicate C Replicate D Replicate E Eure Root Le set root)	ngth:	Replicate B Replicate C Replicate D Replicate E Replicate A Replicate B	175 mm 150 mm 118 mm 122 mm 210 mm	mm	017 Wt. (mg)  989.02	mm mm mm	ma ma	n
Replicate A Replicate B Replicate C Replicate D Replicate E Eure Root Le set root)	ngth:	Replicate B Replicate C Replicate D Replicate E Replicate A Replicate A	175 mm 1250 mm 178 mm 122 mm 120 mm 1210 mm 122 mm 120 mm	mm	017 Wt. (mg) 989.02 1631.92 1003,88	mm mm mm	ma ma	n
Replicate A Replicate B Replicate C Replicate D Replicate E Eure Root Le set root)	ngth:	Replicate B Replicate C Replicate D Replicate E Replicate A Replicate B	175 mm 150 mm 178 mm 122 mm 210 mm	mm	Dry Wi. (mg)  989.02  1031.92  1003,88  1001.33	mm mm mm	ma ma	n
Replicate A Replicate B Replicate C Replicate D Replicate E Eure Root Le set root)	ngth:	Replicate B Replicate C Replicate D Replicate E Replicate A Replicate A	175 mm 1250 mm 178 mm 122 mm 120 mm 1210 mm 122 mm 120 mm	mm	017 Wt. (mg) 989.02 1631.92 1003,88	mm mm mm	ma ma	n
epilcate A apilcate B apilcate C apilcate C apilcate D tepilcate E ture Rect Le set root)	ngth:	Replicate B Replicate C Replicate D Replicate E Replicate A Replicate B Replicate C Replicate C	175 mm 1250 mm 178 mm 122 mm 120 mm 1210 mm 122 mm 120 mm	mm	Dry Wt. (mg)  989.02  1031.92  1003.88  1091.33	mm mm mm	ma ma ma ma	n

Report Date:

18 Jul-06 3:22 PM

Test Link:

08-1616-5737/B154208psB

	y - Chronic							
Test No:	04-2827-7585		Test Type:	Plant Chroni	ic		Duration:	N/A
Start Date:	25 Jan-06		Protocol:	ASTM E196	3-02 (2002)		Species:	Poa sandbergii
Ending Date:			Dil Water:				Source:	
Setup Date:	25 Jan-06		Brine:					
Comments:	recalculated H	eight and	Length data	luly 18, 2006				
Sample No:	15-5450-5055		Code:	B1542-08			. Client:	
Sample Date:	28 Nov-05		Material:	Soil			Project:	
Receive Date:			Source:	Hanford				
Sample Age:	58d 0h		Station:					
Comments:	J10LJ5, E289	701						
Comparison S	Summary							
Analysis	Endpoint		NOEL			ChV	PMSD	Method
08-3096-8743	% Germination		100	> 100		N/A	23.35%	Wilcoxon Rank Sum Two-Sample
	Average AG W			> 100		N/A	85.91%	Equal Variance t Two-Sample
	Average AG W			> 100		N/A	55.97%	Equal Variance t Two-Sample
	Average Root			> 100		N/A	72.60%	Equal Variance t Two-Sample
	Average Root	-		> 100		N/A	52.48%	Equal Variance t Two-Sample
	Average Total		_	> 100		N/A	74.97%	Equal Variance t Two-Sample
	Average Total	WI (DIY, I	mg) 100	> 100		N/A	52.88%	Equal Variance t Two-Sample
% Germinatio				No.	-	4.5		A.A.
Conc-%	Control Type	Reps	Mean	Minimum	Maximum		SD	cv
0	Artificial Soll/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.92000	0.60000	1.00000	0.08000	0.17889	19.44%
Average AG W	Vt (Wet, mg) Si	ummary						
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soll/S	5	63.903	41.475	82.338	7.1313	15.946	24.95%
100		5	78.309	16.504	172.27	28.648	64.058	81.80%
Average AG W	Vt (Dry, mg) Su	mmary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soll/S	5	12.351	7.9275	19.276	2.1347	4,7733	38.65%
100	, dulidial confe	5	10.963	2.786	19.076	3.0434	6.8052	62.08%
	1844 (IN)-4>					5.5.01	0.000	
	Wt. (Wet, mg)		•			-		
	Control Type			Minimum	Maximum		SD	CV
0	Artificial Soil/S		113.23	51.638	158.52	21.449	47.962	42.36%
100		5	127.49	15.638	236.01	38.654	86.433	67.79%
	Wt. (Dry, mg)							w
Conc-%	Control Type		Mean	Minimum	Maximum		\$D	CV
0	Artificial Soll/S		7.8666	3.78	14.108	1.8639	4.1678	52.98%
100	1000	5	5.3735	1.522	8.0380	1.2063	2.6973	50.20%
	Wt (Wet, mg)							
	Control Type		Mean	Minimum	Maximum		SD	cv
0	Artificial Soil/S		177.14	93.113	240.86	26.086	58.331	32.93%
100		5	205.80	32.142	408.27	66.483	148.66	72.23%
Average Total	Wt (Dry, mg) S	Summary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	20.217	12.223	33.384	3.9407	8.8117	43.58%
100		5	16.336	4.3080	27.114	4.1865	9.3612	57.30%

Report Date:

18 Jul-06 3:22 PM

CETIST	Test Summa	ary					Report Date: Test Link:	18 Jul-06 3:22 PN 08-1616-5737/B154208psE
% Germina	tion Detail							
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000		
100		1.00000	1.00000	1.00000	0.60000	1.00000		
Average AC	Wt (Wet, mg) De	etail						
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	•	
0	Artificial Soil/S	67.2900	55.1900	82.338	73.2233	41.4750		
100		58.13	16.504	112.862	31.7833	172.268		
Average A	Wt (Dry, mg) Dei	tail						
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751		
100		10.402	2.786	16.3760	6.17334	19.0760		
Average Ro	oot Wt. (Wet, mg)	Detail						
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375		
100		92.7300	15.638	189.334	103.767	236.006		
Average Re	oot Wt. (Dry, mg) I	Detail						
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Artificial Soll/S	8.75601	8.39399	14.108	3.77999	4.295		-
100		4.33401	1.522	7.83000	5.14333	8.03800		
Average To	otal Wt (Wet, mg)	Detail						
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Artificial Soil/S	210.652	195.814	240.862	145.247	93.1125		
100		150.86	32.142	302.196	135.550	408.274		
Ачегаде То	otal Wt (Dry, mg) [	Detail						
Conc-%	<b>Control Type</b>	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Artificial Soil/S	23.9280	18.946	33.384	12.6066	12.2225		
100		14.7360	4.30801	24.2060	11,3167	27.1140		

Comparisons:

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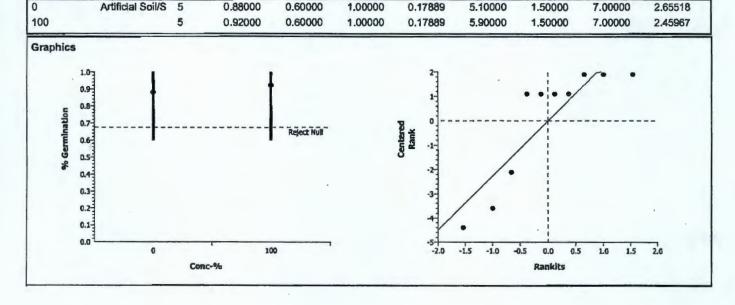
Report Date:

18 Jul-06 3:22 PM

Analysis:

08-3096-8743/B154208psB

OL 110 Allaly	olo Dolai							Analysis:	05-3090-074	3/B154208ps
Plant Bioassay - C	hronic									CH2M Hill
Endpoint		Anal	ysis Type		Sample Li	nk Contr	ol Link	Date Analyzed	Version	
% Germination		Com	parison		08-1616-5	737 08-16	16-5737	18 Jul-06 3:22 P	M CETISV	1.1.2
Method		Alt I	H Data T	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sun	Two-Sample	C>	T Rank			100	>100	1	N/A	23.35%
Group Comparison	ns									
Control vs	Conc-%		Statistic	Critical	P-Value	Ties		Decision(0.05)		
Artificial Soil/Sedi	100		29.5		0.5794	3		Non-Significant E	ffect	
ANOVA Table										
Source	Sum of Squ	ares	Mean Squa	re DF	F Statisti	c P-Value	9	Decision(0.05)		
Between	0.0056708		0.005671	1	0.13	0.72399	9	Non-Significant E	ffect	
Error	0.3390172		0.042377	8						
Total	0.34468800		0.0480479	9						
ANOVA Assumption	ons									
Attribute	Test			Statistic	Critical	P-Valu	e	Decision(0.01)		
Variances	Variance Ra	tio F		1.00963	23.15450	0.9928	1	Equal Variances		
Distribution	Shapiro-Will	W		0.71659		0.0014	)	Non-normal Distri	bution	
Data Summary Orig				Origi	nal Data			Transf	ormed Data	
Conc-% Con	trol Type Co	ount	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0 Artifi	dal Soil/S 5		0.88000	0.60000	1.00000	0.17889	5.10	000 1.50000	7.00000	2.65518



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Report Date:

17-4986-7382/B154208psB

OLIIOA	nalysis Del	all						Analysis:	17-4986-73	82/B154208ps		
Plant Bioass	ay - Chronic									CH2M Hil		
Average AG Wt (Wet, mg) Con			lysis Type		Sample Link Control 08-1616-5737 08-1616		l Link	Date Analyzed	Version			
			parlson				6-5737	18 Jul-06 3:22 P	M CETIS	v1.1.2		
Method		Alt	H Data T	ransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD		
Equal Variand	e t Two-Sample	C>	T Untrans	sformed		100	>100	1	N/A	85.91%		
Group Comp	arisons								-			
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)				
Artificial Soil/	Sedi 100		-0.488	1.85955	0.6807	54.8976		Non-Significant Ef	fect			
ANOVA Tabl	9											
Source	Sum of S	Squares	Mean Squa	re DF	F Statistic	c P-Value		Decision(0.05)				
Between	518.847		518.847	1	0.24	0.63866		Non-Significant Ef	ffect			
Error	17431.01		2178.877	8								
Total	17949.86	507	2697.7238	9	_							
ANOVA Assu	mptions											
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)				
Variances	Variance Ratio F 16.13761				23.15450	0.01963		Equal Variances				
Distribution	Shapiro-	Wilk W	0.95324			0.70689	0.70689 Normal Distribution					
Data Summa	ry		Original Data					Transf	ormed Data			
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD		
0	Artificial Soil/S	5	63.903	41.475	82.338	15.946						
100		5	78.309	16.504	172.27	64.058		,				
Graphics												
						200						
1						100-3			•	,		
(P 1						80-		1				
광 1						TO 60-		1				
Vt (Wet, mg)						DE 40		i	/			
5 .						10 to		i	/•			

0.5

0.0 Rankits 1.D

100

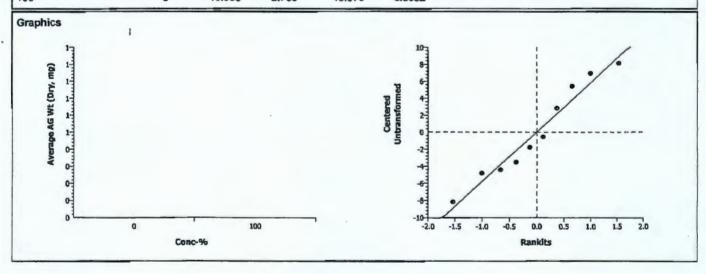
Conc-%

Comparisons:

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Report Date: Analysis: 18 Jul-06 3:22 PM 08-3301-7719/B154208psB

Plant Bioass	ay - Chroni	c		•							CH2M HI
Average AG Wt (Dry, mg) Co		Ana	lysis Type		Sample Link Control 08-1616-5737 08-1616		ol Link	Date Analyzed	Version		
		Con	nparison				16-5737	18 Jul-06 3:22 Pl	M CETISV1.1.2		
		Alt	H Data	Fransform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD	
Equal Variance t Two-Sample C		C>	T Untrar	nsformed		100	>100	1	N/A	55.97%	
Group Comp	parisons										
Control	vs Con	IC-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/	I/Sedi 100		0.37342 1.85955		0.3593	6.91265		Non-Significant Effect			
ANOVA Tabl	e							-			
Source	Sum of Squares		Mean Square DF		F Statistic P-Value		9	Decision(0.05)			
Between	4.8	4.817486		4.817486 1		0.14	0.71853		Non-Significant Effect		
Ептог	276	3.3788		34.54735	8						
Total	281	1.1962	.7	39.364834	9						
ANOVA Assi	umptions										
Attribute	te Test		Statistic		Critical	P-Value		Decision(0.01)			
Variances	Var	Variance Ratio F		2.03252		23.15450	0.50901		Equal Variances		
Distribution	Sha	Shapiro-Wilk W		0.94217			0.57742		Normal Distribution		
Data Summary Origin					nal Data	Data Transformed Data					
Conc-%	Control T	ype	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial S	oil/S	5	12.351	7.9275	19.276	4.7733				
100			5	10.963	2.786	19.076	6.8052				



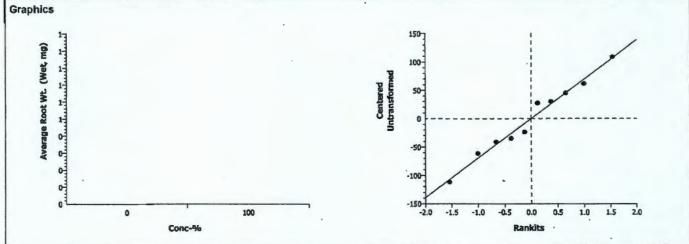
Comparisons:

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Report Date: Analysis:

09-1519-5887/B154208psB

										CH2M F
						ntrol Link			Version	
						1616-5737			CETI\$v1	1.2
	Alt	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD
e t Two-Sample	C >	T Untrar	sformed		100	>100	1	N/A		72.60%
arisons										
vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
edi 100		-0.3226	1.85955	0.6224	82.2	037	Non-Significant	Effect		
	Squares	Mean Squ	are DF	F Statistic	c P-Va	alue	Decision(0.05)			
		508.4237	1	0.10	0.75	527	Non-Significant	Effect		
39083.88	3	4885.484	8							
39592.29	87	5393.9081	9							
mptions										
Test			Statistic	Critical	P-Va	alue	Decision(0.01)		- 1/	
Variance	Ratio F		3.24754	23.15450 0.28037		037	Equal Variances			
Shapiro-Wilk W			0.97884		0.95	867	Normal Distribut	tion		
Data Summary			Original Data				Transformed Data			
Control Type	Count	Mean	Minimum	Maximum	SD	Mea	an Minimu	m Ma	ximum	\$D
Artificial Soil/S	5	113.23	51.638	158.52	47.962					
	5	127.49	15.638	236.01	86.433					
				,						
					15	2				/
							1		1	
	st Two-Sample arisons vs Conc-% edi 100  Sum of \$ 508.4237 39083.88 39592.29  mptions Test Variance Shapiro-  y Control Type	Wit. (Wet, mg) Com  Alt at Two-Sample C >  Arisons vs Conc-% edi 100  Sum of Squares 508.4237 39083.88 39592.2987  mptions Test Variance Ratio F Shapiro-Wilk W  Y  Control Type Count Artificial Soil/S 5	Alt H   Data	No.   Comparison   Alt   H   Data Transform	Nt. (Wet, mg)   Comparison   O8-1616-57     Alt H   Data Transform   Zeta     P-Value     P-Value     Alt H   Data Transform   Description     Alt H   Data Transform   Zeta     P-Value   Description   P-Value     Alt H   Data Transform   Description     Alt H   Data Transform   Description   Description     Alt H   Data Transform   Description   Description     Alt Two-Sample   Description   Description   Description   Description     Alt Two-Sample   Description   Descr	Note   Note	Mile	Wit. (Wet, mg)   Comparison   08-1616-5737   08-1616-5737   18 Jul-06 3:22     Alt H   Data Transform   Zeta   NOEL   LOEL   Toxic Units     17	With (Wet, mg)   Comparison   O8-1616-5737   O8-1616-5737   18 Jul-06 3:22 PM	With (Wet, mg)   Comparison   O8-1616-5737   O8-1616-5737   18 Jul-06 3:22 PM   CETISV1



Artificial Soil/S 5

7.8666

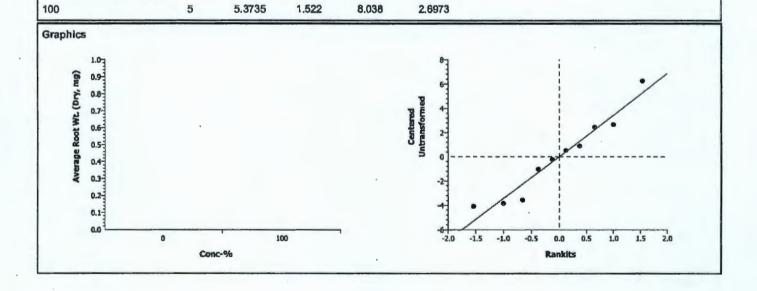
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Comparisons:

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Report Date: Analysis: 18 Jul-06 3:22 PM 19-1974-3646/B154208psB

Plant Bioassay - C	hronic										СН2М Н
Endpoint		Anal	sis Type		Sample L	nk Contr	ol Link	Date Analyzed		Version	
Average Root Wt. (	(Dry, mg)	Com	oarison		08-1616-5	737 08-16	16-5737	18 Jul-06 3:22	PM	CETISV	1.1.2
Method		Alt I	Data 1	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV		PMSD
Equal Variance t Tv	wo-Sample	C > 1	Untra	nsformed		100	>100	1	N/A		52.48%
Group Compariso	ns				~						
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil/Sedi	100		1.12295	1.85955	0.1470	4.1285		Non-Significant E	Effect		
ANOVA Table											
Source	Sum of Squ	ares	Mean Squ	are DF	F Statist	c P-Value	9	Decision(0.05)			
Between	15.53922		15.53922	1	1.26	0.29403	3	Non-Significant E	Effect		
Ептог	98.58252		12.32281	8							
Total	114.121741		27.862037	9							
ANOVA Assumption	ons										
Attribute	Test			Statistic	Critical	P-Value	9	Decision(0.01)			
Variances	Variance Ra	tio F		2.38753	23.15450	0.41990	3	Equal Variances			
Distribution	Shapiro-Will	W		0.94036		0.55702	2	Normal Distributi	ion		
Data Summary				Or	iginal Data			Trans	forme	d Data	
Conc-% Con	tro! Type Co	unt	Mean	Minimur	n Maximum	SD	Mea	n Minimun	n Ma	ximum	SD



14.108

4,1678

Comparisons:

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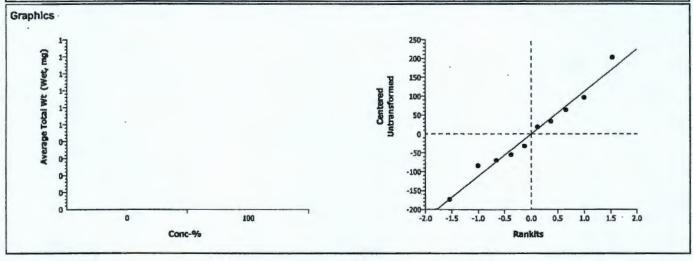
18 Jul-06 3:22 PM

Report Date: Analysis:

01-8008-0233/B154208psB

Plant Bioassay - C	hronic										CH2M Hi
Endpoint		Analys	sis Type		Sample Li	nk	Control Link	Date Analyzed		Version	
Average Total Wt	(Wet, mg)	Compa	arison		08-1616-5	737	08-1616-5737	18 Jul-06 3:22	PM	CETISV	1.1.2
Method		Alt H	Data Tra	nsform	Zeta	NOE	LOEL	Toxic Units	ChV		PMSD
Equal Variance t To	wo-Sample	C>T	Untransf	ormed		100	>100	1	N/A		74.97%
Group Compariso	ns										
Control vs	Conc-%		Statistic	Critical	P-Value	M	SD	Decision(0.05)			
Artificial Soil/Sedi	100		0.4014	1.85955	0.6507	13	32.804	Non-Significant I	Effect		
ANOVA Table											
Source	Sum of Squa	res 1	Mean Square	DF	F Statisti	c P	-Value	Decision(0.05)			
Between	2054.488	:	2054.488	1	0.16	0.	69863	Non-Significant I	Effect		
Error	102008.6		12751.07	8							
Total	104063.043		14805.558	9	_						
ANOVA Assumpti	ons										
Attribute	Test		S	tatistic	Critical	P	-Value	Decision(0.01)			
Variances	Variance Rati	oF	6.	49508	23.15450	0.	09731	Equal Variances			
Distribution	Shapiro-Wilk	W	0.	98356		0.	98135	Normal Distribut	ion		

Data Summary				Origin	nal Data			Transformed Data		
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	177,14	93.113	240.86	58.331				
100		5	205.80	32.142	408.27	148.66				



Comparisons:

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Report Date:

07-1829-7693/B154208psB

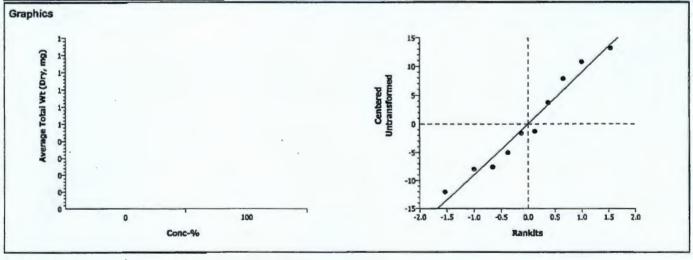
or in any old Bott	•••					Alialysis.	01-1	1029-1093/D134200p3
Plant Bioassay - Chronic								CH2M Hill
Endpoint	Analysi	Analysis Type		ink Co	ntrol Link	Date Analyzed		Version
Average Total Wt (Dry, mg)	Comparison		08-1616-5737 08-1616-5737		18 Jul-06 3:22 PM		CETISv1.1.2	
Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C>T	Untransformed		100	>100	1	N/A	52.88%

Control	VS	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)	
Artificial Soi	I/Sedi	100	0.67508	1.85955	0.2593	10.6913	Non-Significant Effect	

ANOVA Table							
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)	
Between	37.66095	37.66095	1	0.46	0.51866	Non-Significant Effect	
Ептог	661.1147	82.63934	8				
Total	698.7757	120.3003	9	_			

ANOVA ASSUMPTIONS									
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)				
Variances	Variance Ratio F	1.12860	23.15450	0.90949	Equal Variances				
Distribution	Shapiro-Wilk W	0.94792		0.64396	Normal Distribution				

Data Summary				Origin	nal Data		Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Artificial Soil/S	5	20.217	12,223	33.384	8.8117				
100		5	16.336	4.3080	27.114	9.3612				



				le ID: E2				3542.09		
			#	seeds ger	minate	出	e 30		5	H
CONC.	REPLICATE	PRE-EMERGENCE (12 days after planting)		PDST EMERGE (16 days	I- ENCE alter	7-b/ EMI	YS POST- ERGENCE days after, lanting)	14-DAYS POST- EMERGENCE (26 days after planting)	(@ planting)	FINAL (28 days after planting)
	Α	1		1	1.	1	2	2		
100%	В	1	-	3	3	3	3	3		
	С	Ð	3~X2	2	2	3	3	3	7.4	7.2
	D	0		1	2	2	3	2		
	E	b	2	3	3.	3	2	2		
. Dort-Emer	Salartius	ly thin down to 5 Seed	ince deave the 5 talk	est saedlings	04/21		thoot annears	Incer		
splicate A	1. median			hacts )		NI	good	war -	1 brudle	af plant n
teplicate 8	1 large	-		1 200		مدار	-			-
eplicate C	2		nell - gov	-	_					
Replicate D	2 metim plats w/ soul culor + 1 seeding just energing									
teplicate E	1 medi.	m + I sm	11 12 500	shape	e +	-1		boun sing	- 1	
				0						
ys Post-Eme	rgence: Describe	e shoot appearance:	111				- 1	1 1		
eplicate A	2 Soul	a planta	100K	- 4 7		mle	35	losts 16	roun	
eplicate B	2 Smel	Ul / large	Sm		ook	00	or 10	rge /60	Ks good	
Repticate C	2 ned	um / 9	inall /	ook ?	9001	<u>d_</u>				
tapticate D	2 med	in look	9000					•		
leplicate E	2 Al	ws Ign	el me	dim						
una Shoot Hei	ght: ·		1st Seedling	2nd See	gnilbe	30	d Seedling	4th Seedling	5th Seedling	# She
e ground)		Replicate A	(#D mm	2-	7 mm		mm	mm	mn	2,10
		Replicate B	20 mm	21	mm		68 mm	- mm	mn	2,2
		Replicate C	46 mm		mm		15 mm	mm	mn	12.1
		Replicaté D	55 mm	45	mm		mm	mm m	mn	8,14
		Replicate E	36 mm	29	mm		mm	mm	mn	10,4
sure Shoot We	laht:		Tin Tare Wi. (mg)	Wet WI	(mp)	Dr	y Wt. (mg)	1		, ,
ove ground)		Replicate A	974.32	1014		-	81 .89	1		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Replicate B	982.82	1200	1.1	10				
		Replicate C	989.34	1196	.5	10	12.48	1		
		Replicate D	986.00	112	7.6	1	9-69	1		
		Replicate E	983.66	1031	.0	99		1		
		Replicate E	144.00		0			J.		
escribe root as	ipearance:									
Replicate A	1.1	1		1		1	-16		2 .	M A
Replicate 8	large	2 routsys	em - p	aler i	200	lor	The	normal	2 smel	" CIC_
	-									
Replicate C										
Replicate C Replicate D										_
Replicate C Replicate D Replicate E	pth;		1st Seedling	2nd Sec		30	d Seedling	4th Seedling	5th Seedling	
Replicate C Replicate D Replicate E asure Root Leng	yth:	Replicate A	50 mm	la	2 mm		та	men	5th Seedling	
Replicate C Replicate D Replicate E asure Root Leng	yth;	Replicate A	209 mm	3	S mm		32 mm	n mm		7
Replicate C Replicate D Replicate E asure Root Leng	giht	,	209 mm	3	2 mm		32 mm	n mm mm mm	mr	n
Replicate C Replicate D Replicate E sure Root Leng	gifts	Replicate B	209 mm 100 mm	25.00	2 mm 3 mm 7 mm		32 mm	n mm mm mm	mr	n
Replicate C Replicate D Replicate E sure Root Leng	gifu	Replicate B Replicate C	209 mm	373	2 mm 3 mm 7 mm	1	32 mm	norm norm norm norm	me	n n
Replicate C Replicate D Replicate E sure Root Leng past root)		Replicate B  Replicate C  Replicate D	209 mm 209 mm 100 mm	3.	7 mm		32 mm 110 mm	n men n men n men	me me	n n
Replicate C Replicate D Replicate E asure Root Leng agest root)		Replicate B Replicate C Replicate D Replicate E	JO mm	3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3	7 mm	D	32 mm 110 mm 124 mm	n men n men n men	me me	n n
Replicate C Replicate D Replicate E asure Root Leng		Replicate B Replicate C Replicate D Replicate E Replicate A	JO mm  209 mm  100 mm  92 mm  92 mm  Tin Tare Wil (mg)  1018.20	Wei Wil 12 30	7 mm 7 mm 0 mm	10	32 mm 110 mm 110 mm 110 mm 110 mm 110 mm	n men n men n men	me me	n n
Replicate C Replicate D Replicate E asure Root Leng agest root)		Replicate B Replicate C Replicate C Replicate E Replicate E Replicate B	209 mm 209 mm 200 mm 92 mm The Tare Wil (mg) 1018.20	Wet W. 1130	7 mm 7 mm 9 mm	i o i o	32 mm 110 mm 104 mm mm y Wt. (mg) 25.72 30.89	n men n men n men	me me	n n
Replicate C Replicate D Replicate E asure Root Leng geet root)		Replicate B Replicate C Replicate C Replicate E Replicate E Replicate A Replicate B Replicate C	209 mm 209 mm 100 mm 42 mm 1018.20 1018.20 1016.76	Wei Will 300 1310 1330	7 mm 7 mm 1 (mg)	10	32 mm 110 mm 104 mm 104 mm 1025.72 30.89	n men n men n men	me me	n n
teplicate C teplicate D teplicate E une Root Leng		Replicate B Replicate C Replicate C Replicate E Replicate E Replicate B	209 mm 209 mm 200 mm 92 mm The Tare Wil (mg) 1018.20	Wet W. 1130	7 mm 7 mm 0 mm 1 (mg) 2, 8		32 mm 110 mm 104 mm mm y Wt. (mg) 25.72 30.89	n men n men n men	me me	n n

-106-

:\*

-109-

**CETIS Test Summary** 

Report Date:

18 Jul-06 3:46 PM

Test Link:

06-6326-6028/B154209psB

Plant Bioassay	y - Chronic					CH2M Hill
Test No: Start Date:		est Type: rotocol:	Plant Chronic ASTM E1963-02 (20	02)	Duration: Species:	N/A Poa sandbergii
Ending Date:	t	oil Water:			Source:	
Setup Date:	25 Jan-06	Brine:				
Comments:	recalculated Height and Le	ngth data J	luly 18, 2006			
Sample No:	07-3184-0122	ode:	B1542-09		Client:	
Sample Date:	06 Dec-05	faterial:	Soil		Project:	
Receive Date:		ource:	Hanford			
Sample Age:	50d 0h	station:				
Comments:	J10DT9, E295301					
Comparison S	Summary					
Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
03-9052-5158	% Germination	< 100	100	N/A	18.38%	Equal Variance t Two-Sample
02-7014-0591	Average Height (mm)	100	> 100	N/A	18.77%	Equal Variance t Two-Sample
02-3798-4672	Average Length (mm)	< 100	100	N/A	20.14%	Equal Variance t Two-Sample
17-3204-0544	Average AG Wt (Wet, mg)	100	> 100	N/A	40.33%	Equal Variance t Two-Sample
05-2477-1090	Average AG Wt (Dry, mg)	100	> 100	N/A	42.47%	Equal Variance t Two-Sample
04-2228-1027	Average Root Wt. (Wet, m	g 100	> 100	N/A	45.20%	Equal Variance t Two-Sample
03-5331-7481	Average Root Wt. (Dry, mg	) 100	> 100	N/A	48.68%	Equal Variance t Two-Sample
06-4830-6917	Average Total Wt (Wet, m	g 100	> 100	N/A	40.21%	Equal Variance t Two-Sample
04-0188-8910	Average Total Wt (Dry, mg	100	> 100	N/A	43.16%	Equal Variance t Two-Sample

Approval:

**CETIS Test Summary** 

Report Date: Test Link: 18 Jul-06 3:46 PM

06-6326-6028/B154209psB

% Germina	tion Summary							
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	0.88000	0.60000	1.00000	0.08000	0.17889	20.33%
100		5	0.48000	0.40000	0.60000	0.04899	0.10954	22.82%
Average H	eight (mm) Summ	ary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	45.68	36.700	55.8	3.3695	7.5344	16.49%
100		5	37.86	32.5	50	3.1487	7.0408	18.60%
Average Lo	ength (mm) Summ	nary						
Conc-%	Control Type	Reps	Mean .	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	124.62	89.800	153.2	12.597	28.167	22.60%
100		5	85.160	70	98 .	4.8488	10.842	12.73%
Average AC	Wt (Wet, mg).Si	ummary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	63,903	41.475	82.338	7.1313	15.946	24.95%
100		5	51.001	19.99	73.76	11.883	26.571	52.10%
Average AC	Wt (Dry, mg) Su	mmary						
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	12,351	7.9275	19.276	2.1347	4.7733	38.65%
100		5	8.6617	3.7850	12.067	1.8436	4.1225	47.59%
Average Ro	oot Wt. (Wet, mg)	Summa	ry					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	113.23	51.638	158.52	21.449	47.962	42.36%
100		5	90.707	51.115	145.1	17.251	38.574	42.53%
Average Ro	oot Wt. (Dry, mg)	Summar	у					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soll/S	5	7.8666	3.78	14.108	1.8639	4.1678	52.98%
100		5	5.059	3.27	8.265	0.8758	1.9584	38.71%
Average To	otal Wt (Wet, mg)	Summa	ry			٠		
Conc-%	<b>Control Type</b>	Reps	Mean	Minimum	Maximum	SE	SD	cv
0	Artificial Soll/S	5	177.14	93.113	240.86	26.086	58.331	32.93%
100		5	141.71	75.185	213.39	28.05	62.721	44.26%
Average To	otal Wt (Dry, mg) S	Summar	y					
Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Artificial Soil/S	5	20.217	12.223	33.384	3.9407	8.8117	43.58%
100		5	13.721	7.5450	20.11	2.5474	5.6962	41.52%

## **CETIS Test Summary**

000-092-101-1

Report Date.	10 001-00 0.40 1 10
Test Link:	06-6326-6028/B154209psB

% Germina	tion Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	1.00000	1.00000	1.00000	0.60000	0.80000
100		0.40000	0.60000	0.60000	0.40000	0.40000
Average H	eight (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	50.6	41.8	55.8	36.7000	43.5
100		33.5	36.3	37	50	32.5
Average L	ength (mm) Detail					
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	138.800	142	153.2	99.3000	89.8000
100		88.5	90.3000	79	98	70
Average AC	Wt (Wet, mg) Do	etail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soll/S	67.2900	55.1900	82.338	73.2233	41.4750
100		19.99	73.76	68.8867	68.3	24.0700
Average AC	Wt (Dry, mg) De	tail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	15.1720	10.552	19.276	8.82666	7.92751
100		3.78500	12.0667	11.0467	11.8450	4.56500
Average Ro	oot Wt. (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	143.362	140.624	158.524	72.0233	51.6375
100		55.9	98.0133	103.41	145.095	51.115
Average Ro	oot Wt. (Dry, mg) I	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	8.75601	8.39399	14.108	3.77999	4.295
100		3.75998	4.71000	5.29	8.26498	3.26999
Average To	otal Wt (Wet, mg)	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S	210.652	195.814	240.862	145.247	93.1125
100		75.89	171.773	172.297	213.395	75.185
Average To	otal Wt (Dry, mg) [	Detail				
Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Artificial Soil/S		18.946	33.384	12.6066	12.2225
100		7.54501	16.7767	16.3366	20.11	7.83502

Analyst: 3~

Variance Ratio F

Variances

Comparisons:

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Analysis:

Equal Variances

03-9052-5158/B154209psB

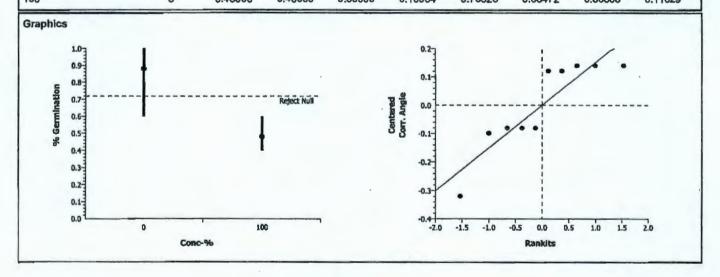
Plant Bioassay - C	hronic							CH2M Hill
Endpoint	A	nalysis Type		Sample Li	nk Control Link	Date Analyzed	Versio	n
% Germination	C	Comparison		06-6326-60	28 06-6326-602	8 18 Jul-06 3:46 PM	1 CETIS	v1.1.2
Method	A	It H Data Tr	ransform	Zeta	NOEL LOEL	Toxic Units	ChV	PMSD
Equal Variance t Tv	wo-Sample C	>T. Angular	(Corrected)		<100 100		N/A	18.38%
Group Compariso	ns							
Control vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)		
Artificial Soil/Sedi	100	4.21032	1.85955	0.0015	0.19458	Significant Effect		
ANOVA Table								
Source	Sum of Square	es Mean Squar	re DF	F Statistic	P-Value	Decision(0.05)		
Between	0.4852164	0.485216	1	17.73	0.00295	Significant Effect		
Ептог	0.2189753	0.027372	8					
Total	0.70419164	0.5125883	9					
ANOVA Assumption	ons							
Attribute	Test		Statistic	Critical	P-Value	Decision(0.01)		

Distribution	Shapiro-	Wilk W	0.81229			0.02044	Nom	Normal Distribution				
Data Summary			Original Data					Transformed Data				
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD		
0	Artificial Soll/S	5	0.88000	0.60000	1.00000	0.17889	1,20581	0.88608	1.34528	0.20635		
100		5	0.48000	0.40000	0.60000	0.10054	0.76526	0.68472	U BBEUB	0.44020		

23.15450

0.25233

3.50066



Comparisons:

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Report Date:

18 Jul-06 3:46 PM

JE 110 A	naiysis De	lan						Analysis:	02-7014-059	I/B154209ps
Plant Bioass	ay - Chronic				-					CH2M Hil
Endpoint			lysis Type		Sample Lir		ol Link	Date Analyzed	Version	
Average Heig	ght (mm)	Con	nparison		06-6326-60	28 06-632	6-6028	18 Jul-06 3:46 PM	A CETISV	1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variand	ce t Two-Sample	C>	T Untra	nsformed		100	>100	1	N/A	18.77%
Group Comp	arlsons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/S	Sedi 100		1.69568	1.85955	0.0642	8.57572		Non-Significant Eff	ect	
ANOVA Table	е					•				
Source	Sum of	Squares	Mean Squ	are DF	F Statistic	P-Value		Decision(0.05)		
Between	152.881		152.881	1	2.88	0.12839		Non-Significant Eff	ect	
Error	425.36		53.16999	8	_					
Total	578.2409	936	206.05098	9						
ANOVA Assu	ımptions									
Attribute	Test			Statistic	Critical	P-Value	)	Decision(0.01)		
Variances	Variance	Ratio F		1.14512	23.15450	0.89868		Equal Variances		
Distribution	Shapiro-	Wilk W		0.90260		0.23393		Normal Distribution	1	
Data Summa	ry			Orig	inal Data			Transfo	rmed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mear	n Minimum	Maximum	SD
0	Artificial Soll/S	5	45.68	36.7	55.8	7.5344				
100		5	37.86	32.5	50	7.0408				
Average Height (mm) 57					Contented	Untransformed			./	

100

Conc-%

0.5 1.0 1.5 2.0

Rankits

Analyst: 3

Comparisons:

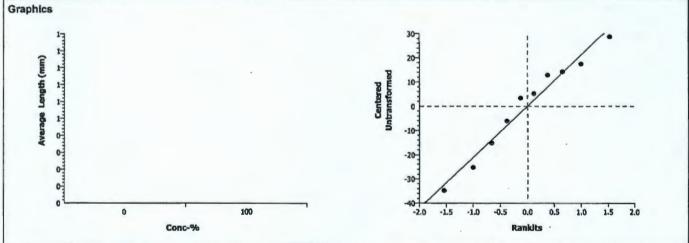
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Report Date:

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Analysis:	02-3/98-46/2	2/8154209

	ysis Dei							Analysis:		
Plant Bioassay - (	Chronic									СН2М Н
Endpoint		Ana	lysis Type		Sample Li	nk Contro	1 Link	Date Analyzed	Version	
Average Length (r	nm)	Cor	nparison		0,6-6326-6028 06-6326-		6-6028	18 Jul-06 3:46 P	M CETISV1	.1.2
Method		Alt	H Data	Transform	Zeta	NOEL I	OEL	Toxic Units	ChV	PMSD
Equal Variance t T	wo-Sample	C>	T Untra	nsformed		<100	100		N/A	20.14%
Group Compariso	ons									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Sedi	100		2.92349	1.85955	0.0096	25.0994		Significant Effect		
ANOVA Table										
Source	Sum of S	Squares	Mean Squ	are DF	F Statisti	c P-Value		Decision(0.05)		
Between	3892.729		3892.729	1	8.55	0.01919		Significant Effect		
Error	3643.699	9	455.4624	8						
Total	7536.428	347	4348.1914	9	_					
ANOVA Assumpt	ions	,								
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F		6.74906	23.15450	0.09132		Equal Variances		
Distribution	Shapiro-	Wilk W		0.95907		0.77517		Normal Distribution	חמ	
Data Summary				Origi	nal Data			Transf	ormed Data	
Conc-% Co	ntrol Type	Count	Mean	Minimum	Maximum	SD	Mean	n Minimum	Maximum	SD
	ificial Soil/S	5	124.62	89.8	153.2	28.167				
0 Arti		5	85.160	70	98	10.842				



Report Date: **CETIS Analysis Detail** 

Comparisons:

Page 4 of 9 18 Jul-06 3:46 PM

Analysis:

17-3204-0544/B154209psB

Fidit Dioass	say - Chronic			<del></del>						CH2M
Endpoint		Ana	lysis Type		Sample L		ol Link	Date Analyzed	Version	
Average AG	Wt (Wet, mg)	Con	parison		06-6326-6	028 06-632	26-6028	8 18 Jul-06 3:46 PM CETISV		1.1.2
Method		Alt	H Data	Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Varian	ce t Two-Sample	C>	T Untra	nsformed	×	100	>100	1	N/A	40.33%
Group Comp	parisons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/			0.93097	1.85955	0.1896	25.7707		Non-Significant E	ffect	
ANOVA Tabl	e	20 W A								
Source		Squares	Mean Squ	are DF	F Statist	ic P-Value		Decision(0.05)		
Between	416.149		416.1495	1	0.87	0.37911		Non-Significant E	ffect	
Error	3841.203	3	480.1504	8						
Total	4257.352	239	896.29987	9	_					
ANOVA Ass	umptions				1.					
Attribute	Test			Statistic	Critical	P-Value	•	Decision(0.01)		
Variances					23.15450			Equal Variances		
Distribution				0.87112		0.10300		Normal Distribution	on	
Data Summa	ary			Origi	inal Data			Transf	formed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial Soll/S	5	63.903	41.475	82.338	15.946				
100		5	51.001	19.99	73.76	26.571				
Graphics										
						30-3			,	
Average AG Wit (Wet, mg)						3			/.	
Average AG Wt (Wet, mg)						20-			./.	
× 1						Centered Unbransformed				
¥ .]						50		•1/		
9						5 6 0		*		
98						5 -10		6		
5 0						-				
₹ 0						-20-		/.		
03							/	•		
0						-30	9			
0						40		· · · · · ·		
	0		100	0		-2.0	-1.5		.5 1.0 . 1.5	2.0
		Conc-	%					Rankits		

Comparisons:

Page 5 of 9

Report Date:

18 Jul-06 3:46 PM

Analysis:

05-2477-1090/B154209psB

				_							
Endpoint			lysis Type		Sample Li			Date Analyzed	Version		
Average AG	Wt (Dry, mg)	Com	parlson	•	06-6326-60	06-6326	5-6028	18 Jul-06 3:46 P	M CETIS	CETISv1.1.2	
Method		Alt	H Data 1	ransform	Zeta	NOEL L	OEL	Toxic Units	ChV	PMSD	
Equal Varian	ce t Two-Sample	C >	T Untrar	sformed		100 >	>100	1	N/A	42.47%	
Group Comp	parisons										
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)			
Artificial Soil/			1.30792	1.85955	0.1136	5.24509		Non-Significant Ef	fect .		
ANOVA Tab											
					E 04-41-41	D.16-1		D1-1			
Source		Squares	Mean Squa		F Statistic			Decision(0.05)	Y1		
Between	34.0248		34.02485	1	1.71	0.22723		Non-Significant Ef	Tect		
Error	159.1186		19.88983	8	_						
Total	193.1434	400	53.914675	9							
ANOVA Ass	umptions										
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)			
Variances Variance Ratio F				1.34066	23.15450	0.78323		Equal Variances			
Distribution	Shapiro-	Wilk W		0.88302		0.14132		Normal Distributio	n		
Data Summa	агу			Origi	nai Data			Transfe	ormed Data		
Conc-%	<b>Control Type</b>	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximur	n SD	
0	Artificial Soil/S	5	. 12.351	7.9275	19.276	4.7733					
100		5	8.6617	3.7850	12.067	4.1225					
Average AG Wt (Dry, mg)						Untransformed		· · /	,,		
0						1	• /				
0	0		100	)		-6	-1.5	.0 -0.5 0.0 0.3	5 1.0 1.5	5 2.0	

**CETIS Analysis Detail** 

Comparisons: Report Date: Page 6 of 9 18 Jul-06 3:46 PM

Analysis:

04-2228-1027/B154209psB

Plant Bioassay	- Chronic									CH2M H
Endpoint		Analy	sis Type		Sample Li	nk Con	trol Link	Date Analyzed	Verslor	
Average Root V	Vt. (Wet, mg)	Comp	anison		06-6326-60	28 06-6	326-6028	18 Jul-06 3:46 PI	M CETISV	1.1.2
Method		Alt H	Data Tr	ansform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance	t Two-Sample	C>T	Untrans	formed		100	>100	1	N/A	45.20%
Group Compar	isons									
Control	s Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Artificial Soil/Se	di 100		0.81841	1.85955	0.2184	51.18	56	Non-Significant Eff	fect	
ANOVA Table										
Source	Sum of	Squares	Mean Squar	e DF	F Statistic	P-Val	ue	Decision(0.05)		
Between	1268.72		1268.721	1	0.67	0.436	82	Non-Significant Ef	fect	
Error	15153.4		1894.175	8						
Total	16422.1	190	3162.8954	9	_					
ANOVA Assum	ptions									
Attribute	Test			Statistic	Critical	P-Val	ue	Decision(0.01)		
Variances	Variance	Ratio F	-	.54599	23.15450	0.683	25	Equal Variances		
Distribution	Shapiro-	Wilk W	(	.91570		0.322	47	Normal Distribution	n	
Data Summary				Origin	nal Data			Transfo	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
	Artificial Soil/S	5	113.23	51.638	158.52	47.962				
100		5	90.707	51.115	145.1	38.574				
Average Root Wt. (Wet, mg) solutions.						40 40 40 40 40 40			, ·	
ق	0		. 100			-80 1 -2	0 -1.5	1.0 -0.5 0.0 0.	5 1.0 1.5	2.0

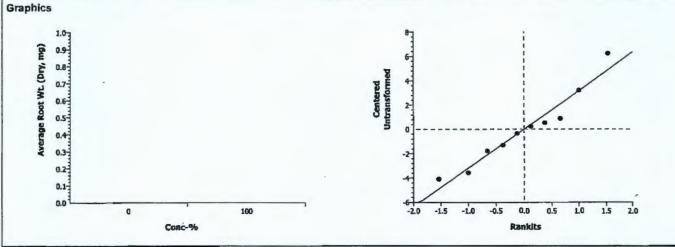
Comparisons:

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Report Date:

18 Jul-06 3:46 PM Analysis: 03-5331-7481/B154209psB

Plant Bioassay -	Chronic									CH2M Hi
Endpoint		Ana	lysis Type		Sample Li	nk Control	Link	Date Analyzed	Version	
Average Root Wt.	(Dry, mg)	Con	nparison		06-6326-60	028 06-6326	6-6028	18 Jul-06 3:46 F	M CETISV1	.1.2
Method		Alt	H Data T	ransform	Zeta	NOEL L	OEL	Toxic Units	ChV	PMSD
Equal Variance t 7	Two-Sample	C>	T Untran	sformed		100 >	100	1	N/A	48.68%
Group Comparis	ons									
Control vs	Conc-%		Statistic	Critical	P-Value	MSD	T	Decision(0.05)		
Artificial Soil/Sedi	100		1.36331	1.85955	0.1050	3.82955	1	Non-Significant E	ffect	
ANOVA Table						•				
Source	Sum of S	Squares	Mean Squa	are DF	F Statistic	P-Value	1	Decision(0.05)		
Between	19.70663	3	19.70663	1	1.86	0.20991	1	Non-Significant E	ffect	
Ептог	84.82246	5	10.60281	8						
Total	104.5290	187	30.309438	. 9						
ANOVA Assumpt	tions				7.0					
Attribute	Test			Statistic	Critical	P-Value	1	Decision(0.01)		
Variances	· Variance	Ratio F		4.52895	23.15450	0.17261	. [	Equal Variances		
Distribution	Shapiro-	Wilk W		0.94997		0.66819	ı	Normal Distribution	on	
Data Summary				Origin	nal Data			Transf	ormed Data	
Conc-% Co	ontrol Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0 Ari	tificial Soil/S	5	7.8666	3.78	14.108	4.1678				
100		5	5.059	3.27	8.265	1.9584				



Comparisons:

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Report Date: Analysis:

06-4830-6917/B154209psB

many old Do							Analysis:	00 4000 0011	10101200
ay - Chronic				MI					CH2M H
	Analys	is Type				ol Link	Date Analyzed	Version	
Wt (Wet, mg)	Compa	arison		06-6326-60	28 06-63	26-6028	18 Jul-06 3:46 PM	CETISV1	.1.2
	Alt H	Data Tra	nsform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
ce t Two-Sample	C>T	Untransfe	ormed		100	>100	1	N/A	40.21%
parisons									
vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)		
Sedi 100	(	0.92492	1.85955	0.1910	71.2307		Non-Significant Effe	ect	
e						-			
Sum of S	Squares I	Mean Square	DF	F Statistic	: P-Value	9	Decision(0.05)		
3138.11	3	3138.11	1	0.86	0.3820	3	Non-Significant Effe	ect	
29346.01	3	3668.251	8						
32484.11	57 6	6806.3606	9						
Shapiro-			88991				Normal Distribution		
•	Count I	Mean			SD	Mea			SD
						IIIOU		III CONTINUE III	-
				213.4	62.721				
					Untransformed  Ontransformed  Ontransformed  Ontransformed		• */	/.	
	ay - Chronic  I Wt (Wet, mg)  De t Two-Sample Darisons  VS Conc-% Sedi 100  Be  Sum of S 3138.11 29346.01 32484.11  Sumptions  Test  Variance	Analys  I Wt (Wet, mg)  Alt H  the t Two-Sample C > T  parisons  vs Conc-%  Sedi 100  E  Sum of Squares I  3138.11  29346.01  32484.1157  Imptions  Test  Variance Ratio F  Shapiro-Wilk W  Artificial Soil/S 5	Analysis Type    With (Wet, mg)   Comparison	Analysis Type   Comparison   Alt H   Data Transform   C > T   Untransformed   Data   Data	Analysis Type	With (Wet, mg)   Comparison   O6-6326-6028   O6-6328   O6-6328	Analysis Type	Analysis Type	Analysis Type

-1.5 -1.0

-0.5 0.0 Rankits 0.5 1.0 1.5 2.0

Conc-%

100

Comparisons:

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18 Jul-06 3:46 PM

										OLIOSE
Plant Bioassa	y - Chronic									CH2M Hi
Endpoint		Anal	ysis Type		Sample Li	nk Contro	I Link	Date Analyzed	Version	
Average Total	Wt (Dry, mg)	Com	parison		06-6326-60	28 06-632	6-6028	18 Jul-06 3:46 P	M CETISv1	.1.2
Method		Alt i		ansform	Zeta		LOEL	Toxic Units	ChV	PMSD
Equal Variance	t Two-Sample	C>.	T Untrans	formed		100	>100	1	N/A	43.16%
Group Compa	risons									
Control	vs Conc-%		Statistic	Critical	P-Value	MSD		Decision(0.05)	,	
Artificial Soil/S	edi 100		1.38453	1.85955	0.1018	8.72574		Non-Significant Et	ffect	
ANOVA Table										
Source	Sum of	Squares	Mean Squar	re DF	F Statistic	P-Value		Decision(0.05)		
Between	105.52		105.52	1	1.92	0.20359		Non-Significant E	ffect	
Error	440.3715	5	55.04644	8	_					
Total	545.8914	141	160.56639	9						
ANOVA Assur	mptions									
Attribute	Test			Statistic	Critical	P-Value		Decision(0.01)		
Variances	Variance	Ratio F	2	2.39308	23.15450	0.41876		Equal Variances		
Distribution	Shapiro-	Wilk W	(	0.91918		0.35017		Normal Distribution	on .	
Data Summar	у			Origi	nal Data			Transf	ormed Data	
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mea	n Minimum	Maximum	SD
0	Artificial Soil/S	5	20.217	12.223	33.384	8.8117				
100		5	13.721	7.5450	20.11	5.6962				
Graphics							-			
- 17						157		1		/
G 1						3		1	/	
È 1						10-				
A N									6	
E 1						5-			/	
2 1						Untransformed		• >		
Average Total Wt (Dry, mg)						0				
Ave						3				
						1		/		

100

Conc-%

-0.5 0.0

Rankits

0.5 1.0 1.5 2.0

# APPENDIX B CHAIN OF CUSTODY

€ 2748

-Washington Cle	osure H	lanford		CF	IAIN OF CUST	TODY/S	AMI	LE	ANAL	YSIS	RE	QUES	T		R	C-051-3	Page 1	of <u>1</u>
Collom L Collom					nv Contact N KESSNER	Telepho 375-4						sner, Ji		Pric	e Code	8L		rnaround
Project Designation 100 & 300 Area Compo	nent of the	RCBRA - Incre	mental So	Sampli 600-	ng Location 131						SAI RC-	'No. 051		Air	Quality	Ы	45	Days
Ice Chest No.				Field L EL-1	ogbook No. 596		COA	a Vas65	520		Met	hod of Sh	ipment					
Shinned To CH2MHILL				Offsite A060	Property No.						Bill	of Ladin	Z/Air Bill	No.				
POSSIBLE SAMPLE H	AZARDS	/REMARKS	٠		Preservation	None	Nor	ne .										
Cassial Way diamond	I C4				Type of Container	G/P	P/6	G										
Special Handling and NONE	or Stora	ge			No. of Container(s)	1	1			1								
				Ī	Volume	1000g	200	ण्ड ७७९	11/8/	5				1				
11-1-05 LAC		SAMPLE ANA	LYSIS			See item (1) in Special Instructions.	Soil P Toxic ASTM E Soil Nem Toxic ASTM I	ily 1963; natode	11/01									
· Sample No.		Matrix *	Samp	le Date	Sample Time		27		2.000				STATE OF	178	Way war	AND THE		
HODVO JIODA	)4	SOIL	10-31	-05	1530	X	X										1	
J <del>105W0</del> -		SOIL																
J <del>10DW1</del>		SOIL																
<del>J100W2</del>		SOIL																
J1 <del>0DW3</del>		SOIL																
CHAIN OF POSSES			Si	gn/Print	Names	L	s	PECI	AL INSTE	UCTIO	NS					*-		Matrix *
Relinquistical By/Removed Fron		Date/Time		d By/Store	Bedr. 11-1	10/Time -05/0-	2	(1) Par	rticle Size (D	ry Sieve) -	D422	: Moisture (	Content - D2	2216; T	OC - 9060;	рН (Soil) - 90	)45; -	S=Soil SE=Sedincul
Relinquished By/Removed Fron	n	Date/Time		d By/Store		ne/Time	79		m by Kjeldah						; Percent So	lids		SO-Salid SI-Sledge
		Date/Time						Bi	ousa	y IC	) =	B/3	42-0	1				W = Wester O=Qil A=Air
Relinquished By/Removed Fron	n	Date/Time	Receive	d By/Stored	d In Da	nte/Time				,								DS+Drum Solida DL+Drum Liquida
Relinquished By/Removed Fron	1	Date/Time	Receive	d By/Stored	d In Da	ite/Time												T=Tinuc Wi=Wipe L=Liquid
Relinquished By/Removed Fron					d In Da	ite/Time									•			V=Vegetation X=Other
Relinquished By/Removed From	1	Date/Time	Receive	d By/Stored	i în Di	ite/Time												
LABORATORY Receiv	ed By	•				Tid	le								_	r	Date/Time	
FINAL SAMPLE Dispos	al Method				· · · · · · · · · · · · · · · · · · ·				Dispo	sed By						1	Date/Tinue	
BHI-EE-011 (08/29/2005)	) .																	

€ 2801

Washingto	n Closure	e Hanford		CH	AIN OF CUST	TODY/S	AMP	LE A	ANAL	YSIS	REQUE	ST		RC	-051-4	Page, 1	of 1
Collector L. COLLOM					V Contact KESSNER	Telephor 375-40					Project Cook		Price	Code	8L		rnaround
Project Designation 100 & 300 Area		f the RCBRA - Increm	ental *So	Samplin PIT 2	ng Location						SAF.No. RC-051		Air (	Quality	[]	45	Days
Ice Chest No.				Field Lo	ogbook No. 596		COA BESR	AS6520	0		Method of Si	nipment					
Shipped To CH2MHILL				Offsite I	Property No. 151						Bill of Ladir	g/Air Bill	No.				
POSSIBLE SAM NONE	PLE HAZAI	RDS/REMARKS			Preservation	None	None	c									
7					Type of Container	G/P	P/G	3									
Special Handlin	ig and/or St	orage			No. of Container(s)	1	1		,								
				ľ	Volume	1000g	-900e-	8 2	11-8-5								
		SAMPLE ANAI	YSIS			See item (1) in Special Instructions.		ity 1963: utode									
Sample ?	No.	Matrix *	Sampl	e Date	Sample Time										8.00		
J10DV4		SOIL	11-8	-05	16:00	1	1										-1
J10DV5		SOIL															
J10DV6		SOIL															
J10DV7		SOIL															
J10DV8		SOIL															
CHAIN OF I	OSSESSION	١	Sig	m/Print ?	Vames				L INSTR								Matrix *
Relinquished By/Remo	ved From	Date/Time		By/Stored		ate/Time ダーンケノ2	1 6				ental preparation			ected soils to	o the CH2M I	Hill	S=Soil SE=Soilmoss
Relinquished By/Remo		Date/Time		By/Stored		ate/Time	(	(1) Partie Nitrogen	cle Size (Dr by Kjeldahl	y Sieve) -   - 351.2; /	D422; Moisture Ammonia - 350.	Content - Di	2216; TO - 300.0;	OC - 9060; Percent So	pH (Soil) - 90 li <b>ds</b>	145;	SO-Solid SI-Sledge W = Water O-Oil
Relinquished By/Remo	ved From	Date/Time	By/Stored	l In D	ate/Time				-l	1110/05					•	A=Air DS=Drum Solids DL=Drum Liquids	
Relinquished By/Romo	ved From	Date/Tinx	By/Stored	I In Di	ate/Time					AS PEN	2.54			•		T=Tiesue Wi=Wipe L=Liquid	
Relinquished By/Remo	ved From	Date/Time	Received	By/Stored	l In D	ate/Time		B	, ou 22	ey IC	11 (10 (05 11 (10 (05) 12 (10 (05) 12 (10 (05) 12 (10 (05) 13 (10 (05) 14 (10 (05) 16	542-0	2				V=Vegetation X=Other
Relinquished By/Remo	ved From	Date/Time	Received	By/Stored	In D	ate/Time				/							
LABORATORY SECTION	Received By	- Invalid				Tiel	le				-					Date/Time	
FINAL SAMPLE	Disposal Met	lod		,					Dispos	sed By					1	Date/Time	
BHI-EE-011 (08/2	9/2005)													100			

Washingto	n Closure	Hanford	`	CHA	AIN OF CUST	TODY/S	AMPL	EANAL	VSIS	REQUE	ST	I	RC-051-9	Page 1	of 1
Collector L. COLLOM			Co	mpany	Contact KESSNER	Telepho 375-4	ne No.	2 1 1 1 1 2 2	2020	Project Cook	dinator	Price Code			urnaround
roject Designatio		the RCBRA - Incremen			Location Backfill Elevated-10	0-F-2				SAF No. RC-051		Air Qualit	ty	45	Days
ice Chest No.				eld Los	zbook No.		COA	5520		Method of Si	hipment				
Shinned To CH2MHILL				Tsite P	roperty No.					Bill of Ladir	ng/Air Bill I	No.			
Possible SAM Potentially Radioa		DS/REMARKS			Preservation	None	None		-						
Special Handlin	n andlay Cta				Type of Container	G/P	P/G								
NONE	ig androi Stu	ладе		1	No. of Container(s)	1	1								
					Volume	1000g	40009								
	ŧ	SAMPLE ANALY	SIS			See item (1) in Special Instructions.	Soil Plant Toxicity ASTM E1963 Soil Nematod Toxicity ASTM E2173								
Sample N	lo.	Matrix *	Sample Da	ale	Sample Time	1000		100 m	10 (C) (C)		AT AT	y market		- i	19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
J10DT8		SOIL .	11/14	05	17:21	1	-								
				_			-	-	-	-		+	+	-	-
															Matrix *
CHAIN OF P Refractished By/Remove Refractished By/Remove Refractished By/Remove	ved Grojn Leved From Se Th	Date/Time	Received By/	Stored 1	Da Da	It Time	15/6 Thurs	gen by Kjeldah	ry Sieve) - 1 - 35 t.2;	D422: Moisture Ammonia - 350.3	: IC Anions -	300.0; Percent S	0: pH (Snit) - Solids	9045;	S-Soil SU-Scoimers SO-Soild SI-Sindge W = Water O-Oil A-Air DS-Drum Soildr DL-Drum Liquids T-Tiame
Relinquished By/Remov	eed From	Date/Time	Received By	Stored 1	n Da	te/Time									ILiquid VaVegeration
Relinquished By/Remov	ved From	Date/Time	Received By/	Stored I	n Da	te/Time									N=Other
Relinquished By/Renry	ved From	Date/fime	Received By/	Stored 1	n Da	te/Time									
LABORATORY SECTION	Received By					Til	ile							Date/Time	
FINA SAMPLE	Disposal Media	ml						Dispo	sed By					Date/Fine	

Washingto Collector	ni Ciosure	Hamoru	-	ompany Co	OF CUS			LE ANA	T)				+	Re	C-051-15	Page 1	of T
LICOLLOM				JOAN KES		Telepho 375-4					ESSNER,	rdinator JH	Pr	ice Code	8L		rnaround
Project Designatio 100 & 300 Area		the RCBRA - Incrementa	I So Sa	ampling Lo	cation tive Reference-C	entral Plateau					F No. 2-051		Ai	r Quality	, ,	45	Days
Ice Chest No.			Fi	ield Logboo EL-1596	k No.		COA BESR/	\S6520	ı	М	ethod of S	Shipment					
Shipped To CH2MHILL			O	Msite Prone A060151	rty No.					В	ill of Lad	ing/Air Bi	II No.				
POSSIBLE SAM NONE	PLE HAZAR	DS/REMARKS		P	reservation	None	None						•				
Special Handlir	ng and/or Sto	rage		Тур	e of Container	J/P	P/G										
NONE	ig anuror Sto	rage		No. o	of Container(s)	ı	1										
					Volume	1000g	4000	3				1					
		SAMPLE ANALYS	IS			See item (1) in Special Instructions	Soil Plat Texicity ASTM ELY Soil Nemat Texicity ASTM E2	963; ode								·	
Sample N	10.	Matrix *	Sample D	ate	Sample Time	Silver in	a version								Sala in		
J10DV2		SOIL	11-15	-05	20:00		1										1
				-					-	-	-	+-				-	
								+-	+			1.					
CHAIN OF F Relinquished By/Reno (1766) Charles Kelinquished By/Reno (Relinquished By/Reno	yed From Cydd From	Date/Time	Sign/P Received By Received By/ Received By/	A VISIONALIA	Nand Cil	nte/Time	11/10/10	Particle Size	ory fo Ory (Dry dahl -	form docume ir incrementa Sieve) - D4: 351.2; Antir	I preparatio 22; Moistur 2001a - 350	m and aliquo e Content - I 3; IC Anion	oting. 02216; s - 300	TOC - 9060; .0; Percent Se	to the CH2M F pH (Soil) - 90 blids		Matrix *  S-Soil SE-Solinem SO-Solid SI-Strage W = Water O-Oil A-Air DS-Draus Solids DL-Draus Ligalds
Relinquished By/Remov	ved From	Date/Time	Received By	Stored In	Da	ne/Time		Bioas	2a	7 20	= 10	1370		7			T=Tlase Wis-Wipe L=Liquid
Relinquished By/Remov	ved From	Date/Fine	Received By/	/Stored In	Da	ite/Time				,							V=Vegetation X=Other
Relinquished By/Remov	ved From	Date/l'ime	Received By/	Stored In	Da	te/Time											
LABORATORY	Received By					Tid	e	-							ם	ate/Time	
FINAL SAMPLE DISTOR	Disposal Metho	d						D	spose	d By					C	Date/Time	
FE-011 (08/29	100000								_								

Washingto	n Closure F	lanford		CH	IAIN OF CUST	CODY/S	AMPL	EANA	LY	SIS I	REQUES	T		RC-051-12	Page 1	of 1
Collector L. COLLOM				Comnai	nv Contact N KESSNER	Telepho 375-4	ne No.			-	roject Coord	dinator	Price Cod	e 8L	Data T	urnaround
Project Designatio		e RCBRA - Incren	nental So		ne Location nd Backfill Low-116-D	R-1&2					AF No.		Air Qua	lity	45	Days
Ice Chest No.				Field L EL-1	ogbook No. 596		COA BESRAS	36520		0	fethod of Sh	ipment				
Shinned To CH2MHILL POSSIBLE SAM	PLE HAZARDS	S/REMARKS		Offsite A060	Property No.	1	1	1	. 1		Bill of Ladin	z/Air Bill	No.	1	1	1
NONE					Preservation	None	None									
Special Handlin	g and/or Store	196			Type of Container	G/P	F/G								•	
NONE	g kinti/or Otora				No. of Container(s)	1	1									
					Volume	10008	40009									
		SAMPLE ANAI	LYSIS			See item (1) in Special Instructions.	Soil Plant Toxicity ASTM E196 Soil Nemato Toxicity ASTM E21	ie								
Sample N	lo.	Matrix *	Sampl	le Date	Sample Time	7.30	100		18 g			· Carrie				A Tok
J10DV1		SOIL	11-15	-05	20105		1		1	-		-				-1
			\													
					•						-				-	
CHAIN OF P	OSSESSION	and f	Sig	n/Print ?	Sames		SPE	CIAL IN	STRU	ICTION!		1				Matrix *
Relinquished By/Removed From Date/Time Received By/Stored In  Polity Date/Time Received By/Stored In  Relinquished By/Removed From Date/Time Received By/Stored In  Relinquished By/Removed From Date/Time Received By/Stored In						terTime	This Cor	eliain of cu vallis labora Particle Size ogen by Kje	stody for tory for (Dry : Idahl •	form docum or increment Sieve) - D 351.2; An	nents the transfe ta) preparation : 422: Moisture C monia - 3503:	ind aliquati ontent - Di IC Anions	ng. 1216: TOC - 90 1300.0; Percen			S=Solt SE=Sediment SO=Solid SI=Sledge W= Water O=Dit A=Alr
Relinquished By/Removed From Date/Time Received By/Stored In						te/Time	451	Bio	as.	say.	ED = B	15 4.	1-05			DS-Drum Solids DL-Drum Liquids T-Tissus W1=Wipe L-Liquid
Relinquished By/Renzov	ed From	Date/Time	Received	By/Stored	In Da	tc/Time										V=Vegetation N=Other
Relinquished By/Remov	ed From	Date/Time	Received	By/Stored	in Da	te/Time										
LABORATORY   SECTION	Received By		-!			Tid	le								Date/Time	
FINALISAMPLE Disposal Method DISPOSITION								D	isposed	d By				-	Date/Time	

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NW ashing to	n Closure	Hanford	JSTODY/S	SAMP	LE	ANAL	YSIS	REC	UES	r	R	C-051-16	Page 1	of 1			
Collector L. COLLOM					N KESSNER		one No. 4688					t Coord NER, JH	inator	Price Code	8L		rnaround
Project Designation 100 & 300 Area (		the RCBRA - Incre	mental So		ing Location and Native Elevated	I-JA Jones					SAF N		1	Air Qualit	y . i	45	Days
Ice Chest No.					Logbook No.	,	COA	RAS65	20 1		Metho	d of Shi	pment				
Shinned To CH2MHILL					Property No.						Bill of	Lading	/Air Bill N	0.			
POSSIBLE SAM	PLE HAZAR	DS/REMARKS			Preservation	None	Non	ic	·								
Special Handlin	g and/or Sto	rage			Type of Contain	G/P	P/C	3									
NONE	6				No. of Containe		1										
					Volume	1000g	4000	09									
		SAMPLE ANA	LYSIS			See item (1) i Special Insurvetions	Toxic	ily 1963; mtode	•								
Sample N	0.	Matrix *	Sam	ple Date	Sample Tir	ne ja					11/						10.00
J10DV3		SOIL	uhi	000	15:2-	7 1	1	-									
											-						
CHAIN OF P. Relinguished By/Remoy  Chair By/Remoy  Relinguished By/Remoy	od From	Date/Fine 10:	O Receive	ign/Print ed By/Store	NA	Date/Time	1	This cha Corvalli	s laboratory	form do	cuments t	paration a	nd aliquoting.		to the CH2M		Matrix.*  S-Soil  SE-Sodiment  SO-Solid  SI-Studge
Elizabe h Relinquished By/Remov	Teispe	Date/Fine	HIL	d By/Store	y Bechen	Date/Time			by Kjeldahi	- 351.2;	Ammonia	- 350.3: 1	C Anions - 3	00.0; Percent S	olids		W = Water O=Oil A=Alr D\$=Drum Solids DL=Drum Liquids
Relinquished By/Renrov	red From	Date/Time	Receive	ed By/Store	d in	Date/Time											ToTissec Wie Wipe LeLiquid
telinquished By/Remov	ed From	Date/l'ime	Receive	ed By/Store	d In	Date/Time				•							V=Vegetation X=Other
telinquished By/Remov	ed From	Date/lime	Receive	ed By/Store	ed in	Date/Time											
SECTION	Received By					Ti	itle								I	Date/Time	
POSITION	Disposal Metho	đ							Dispo	sed By						Date/Time	

E2817

Washington C	Closure H	lanford	C	CHAIN OF CUST	TODY/S	AMPL	E ANAL	YSIS	REQUES'	r	RO	C-051-11	Page 1	of 1
Collecter L. COLLOM			Com	DANY Contact DAN KESSNER	Telephor 375-46	ie No.			Project Coord KESSNER, JH	nator	rice Code	8L		urnaround
Project Designation 100 & 300 Area Comp	ponent of the	RCBRA - Incremen	tal So Ri	pling Location parian Elevated-Site #3 U	lpriver 100-D				SAF No. RC-051	A	ir Quality	;	45	Days
Ice Chest No.		•		Logbook No. L-1596		COA BESRAS	6520		Method of Shir	oment			-	
Shipped To CH2MHILL				ite Pronerty No.	•				Bill of Lading	Air Bill No				
POSSIBLE SAMPLE NONE	HAZARDS	/REMARKS		Preservation	None	None								
Cresial Hamilton on	diam Chaus			Type of Container	G/P	P/G			•					
Special Handling an	wor Stora	ge		No. of Container(s)	1	- 1								
				Volume	1000g	-3000g	- 1	05						
	•	SAMPLE ANALY	SIS		See item (1) is Special Instructions.	Soil Plam Taxicity ASTM E196: Soil Nemated Toxicity ASTM E217	3: le							
Sample No.		Matrix *	Sample Date	Sample Time	## 100 m		S SELECTION	Control line		The state of the s				25
J10DV0				5 16:00	-	1								
CHAIN OF POSS	ESSION		Sign/Prin	nt Names		SPE	CIAL INSTR	UCTIO	NS .					Matrix *
Relinquished By/Removed Fra Elizabeth	roni	Date/Time	Received By/Sto	ored la Da	ate/Time	This	chain of custody	y form do	currents the transfer neutal preparation as		collected soils (	to the CH2M I-	lill	S=Sol1 SR=Solintent
Relinquished By/Ronoved Fn	WY 11	Date/Time 9:00	Received By/Sto	00011111111111111111111111111111111111	ite Time	Nibr	ogen by Kjeldahl	- 351.2;	D422: Moisture Co Ammonia • 350.3: I	C Anions - 30	0.0: Percent So	olids	45: '	SO-Solid SI-Sludge W = Water O-Oil A=Ak OS=Drom Solids OL=Drom Liquid
Relinquished By/Removed Fr	mon	Date/Time	ored In Da	ate/Tinxe		Bioas	say	ID = B	1372	. – 0 7			TaTinne WlaWipe LaLiquid	
Relinquished By/Removed Fro	ons	Date/Time	Received By/Sto	ored in Da	ite/Time									V=Vegazion X=Other
		Date/Time	Received By/Sto	ored in Da	ne/Time									
Relinquished By/Removed Fr	non:	Date/Time	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,											
Relinquisticd By/Removed Francisco	eived By		2)/00		Tide							D	ate/Time	

	n Closure F	lanford		CH	AIN OF CUST	CODY/S	AMPL	E ANAL	YSIS	REQUES	ST		RC-051-20	Page 1	of I
Collector L. COLLOM					V Contact KESSNER	Telenho 375-4				Project Cook KESSNER, J		Price Code	8L -		urnaround
Project Designation 100 & 300. Area (		e RCBRA - Incre	mental So		ne Location ian Low-Site#10 Down	niver 100-D				SAF No. RC-051		Air Qual	ity	45	Days
Ice Chest No.				Field Lo	ogbook No. 596		COA BESRAS	6520		Method of SI	ipment				
Shipped To CH2MHILL POSSIBLE SAM	PLE HAZARDS	SARFMARKS		Offsite I	Property No.	I		. 1	ı	Bill of Ladir	g/Air Bil	INo.	1	1	.1
NONE					Preservation	None	None								
Special Handlin	g and/or Stora	ige			Type of Container	G/P	P/G								
NONE .					No. of Container(s)	1	1								
					Volume	1000g	4000g								
		SAMPLE ANA	LYSIS		CT 11-28-2	See item (1) in Special Instructions.	Soil Plant Toxicity ASTM E196 Soil Nemato Toxicity ASTM E211	le							
Sample N	lo.	Matrix *	Samp	ole Date	Sample Time		cast To V				3 7820		15	14.	
J10LJ5					16:19	1_	1								-/
															•
CHAIN OF P Relinquished By/Rennov Clay Lelly " Relinquished By/Rennov	OSSESSION Ved From HZM Telpper Ved From	ign/Print Med By/Stored		te Time	This Cor	Particle Size (Di	y form do for incren ry Sieve) -	cuments the trans cental preparation	and aliquo	ting. 02216; TOC - 90	oils to the CH2M 060; pH (Soil) - 9		Matrix *  S=Soil SE=Sodiucus SO=Solid St=Stadge W = Water		
elinquished By/Remov	ved From	Receive	ed By/Stored	In Da	te/Time									O+Oil A=Air DS-Drum Solid DL=Drum Liqui	
elinquished By/Remov	red From	Date/Time	Receive	ed By/Stored	in Da	te/Time		Bide	عدد	7 20 :	= B/	542-	08		T=Teleuc WI=Wipe L=Liquid
elinquished By/Remov	ed From	Date/Time	Receive	d By/Stored	In Da	te/Time									N=Other
elinquished By/Remov	red From	Date/Time	Receive	d By/Stored	in Da	te/Time									
LABORATORY SECTION	Received By					Tit	le .							Date/Time	
FINAL SAMPLE Disposal Method DISPOSITION								Dispo	sed By					Date/Time	

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Washingto	on Closure H	anford		CH	AIN OF CUST	TODY/S	AM	PLE	ANAL	YSIS	REQU	EST		I	RC-051-6	Page 1	of I
Collect <del>ol</del> L. COLLOM					NY Contact KESSNER	Telepho 375-4				a	Project C KESSNER	oordinator R, JH	Pı	rice Code	8L		urnaround
Project Designation 100 & 300 Area		RCBRA - Increm	ental So		ng Location rian Reserence-Site #13	Ventita Bri	dge				SAF No. RC-051		Ai	r Qualit	у :	45	Days
Ice Chest No.				Field L	ogbook No. 596		CO	A SRAS6	520		Method o	Shipment					
Shipped To CH2MHILL	**** ** ***			Offsite A060	Property No.		· [-· ·		· ··· · · · ·		Bill of La	ding/Air B	ill No.		.1	į	
POSSIBLE SAM NONE	IPI.E HAZARDS	/REMARKS			Preservation	None	N	lone							. >		
Special Handlin	ng and/or Stora	ge.			Type of Container	G/P	F	PIG		,							
NONE	e dumos otosa				No. of Container(s)	1		1	91.1	10						1	
					Volume	1000g		1000	2126								
		SAMPLE ANAL	YSIS .			See item (1) in Special Instructions.	ASTM Soil No	Plent zicity (E1963: ematode xicity d E2172									
Sample 1	No.	Matrix *	Samp	le Date	Sample Time	177 TOWN	2						97		Sac Call		
J10DT9		SOIL	12-6	0-05	16:00	X	>	Χ								-	-/
									1								
CHAINOF	POSSESSION		Siz	n/Print l	Names			CDEC	IAL INSTR	UCTIO	NIC			. '			Matrix *
Relinquished By/Renno Elizabe	yed From Tel	Date/Time	Received	By/Stored	Hull Di	ite/Time 5	>	This el Corval	lis laboratory	form do	currents the treestal prepare	tion and aliqu	noting.		to the CH2M		S-Soil AE-Sediment SO-Solid
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time								(1) Pa Nitroge /5	en by Kjeldahl	- 351.2;	Airmonis - 3	50.3; IC Anio	ns - 300	).0; Percent !		045;	SI-Sledge W = Water O=Oil 'A=Air DS=Drum Solids DL=Drem Liquis
telinquished By/Remo	I In Da	ite/Time			Bi	sas:	say I	0 = 1	B /	542	-09		T=Tispue W1=Wipe L=Liquid				
delinquished By/Reino	ved From	Date/Time	Received	By/Stored	I In Do	(e/Time											V=Vegention X=Other
telinquished By/Remo	ved From	Date/Time	Received	By/Stored	lin Da	nte/Time											
LABORATORY	Received By				*	Tit	le									Date/Time	
																Date/Time	